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THE ENCYCLOPAEDIA AND DICTIONARY OF EDUCATION

A COMPREHENSIVE, PRACTICAL AND AUTHORITATIVE GUIDE ON ALL MATTERS CONNECTED WITH EDUCATION, INCLUDING EDUCATIONAL PRINCIPLES AND PRACTICE, VARIOUS TYPES OF TEACHING INSTITUTIONS, AND EDUCATIONAL SYSTEMS THROUGHOUT THE WORLD

EDITED BY

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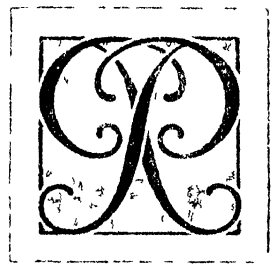
WITH ARTICLES BY ABOUT NINE HUNDRED EMINENT AUTHORITIES



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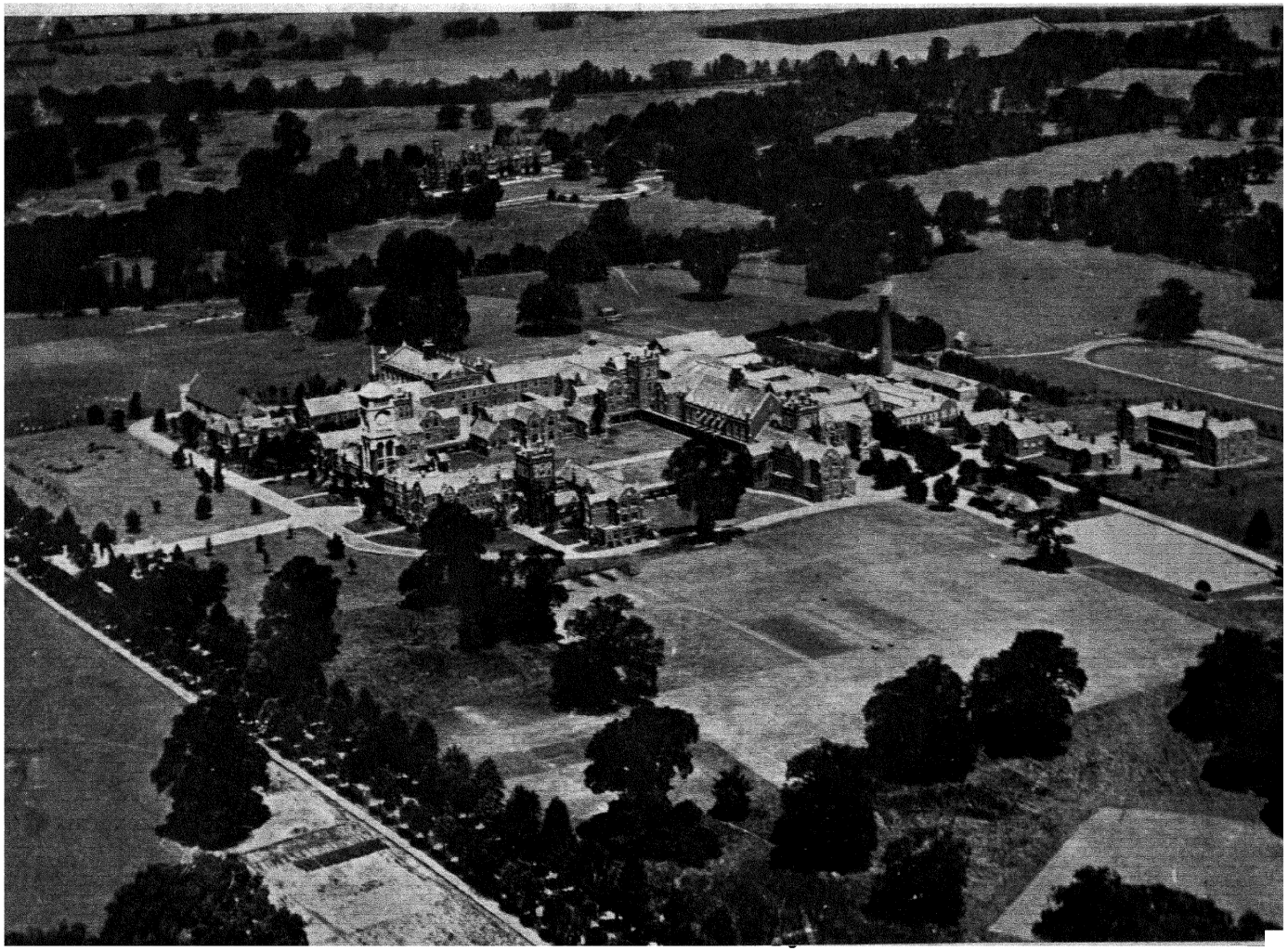

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Royal Masonic Institution for Boys Bushey

PLATE LX

THE ENCYCLOPAEDIA AND DICTIONARY OF EDUCATION

MAKING PLACE HALL.—(See DOVE, WILLIAM)

MAKTAB—(See EGYPT THE EDUCATIONAL SYSTEM OF)

MALEBRANCHE, NICOLAS (1638–1715)—He was an eminent French metaphysician, and the most conspicuous representative of French philos ophy at the end of the seventeenth century He embraced the doctrines of Descartes and wrote the *Recherche de la Verité* on occasions of error and the means of avoiding them He maintained that we ' see all things in God The mind or soul when it is " perceiving as we express it depends imme diately upon God and what we apprehend gives not ideas of our own minds but ideas of God In Malebranche s later works he endeavoured to harmonize his philosophical views with Christianity

MALIM, WILLIAM (1533-1594)—Born probably at Canterbury was educated at Eton and King s College and became a Fellow of his college For some years he travelled in the East visiting Con stantinople Jerusalem and other famous cities In 1561 he became head master of Eton College where he introduced a new system of government as laid down in his *Consuetudinarium* which was an account of the rules and observances of the col lege and is now preserved in the library of Christ s College Cambridge He was a severe head master and the floggings under his rule led Ascham (*q v*) to write his *Scholemaster* (1563) advocating a milder form of discipline Some pupils had run away from Eton to escape Malim s rod and Ascham argued that young children were sooner allured to learning by love than driven to it by beating Malim left Eton in 1571 and from 1573 to 1581 was high master of St Paul s School London He became tired of the ill paid drudgery of teaching and repeatedly petitioned Lord Burghley for pre ferment but without success He was an excellent Latin scholar and his writings consisting of con gratulatory verses and orations are chiefly in Latin

MALTA, EDUCATION IN—In 1835 a Royal Commission of inquiry into the provision then existing for the education of the native population resulted in the establishment of the present system At that time there were two elementary schools in Malta and one in Gozo Other schools were built shortly after the inquiry and in 1844 a Director of Primary Education was appointed whose duties were afterwards extended to include higher educa tion and a system of inspection was established There is now an adequate provision of schools attended by 20 000 scholars and staffed with 750 teachers English and Italian are employed in teaching and parents choose which language shall be used in the first years of their children s school life The prevailing religion in Malta is Roman Catholic and its principles are taught in the schools The elementary schools provide instruction in the usual subjects including handwork for boys and needlework for girls In the towns drawing classes are held in the evenings Valetta has two secondary schools one for boys and one for girls and Gozo has one for boys A higher school called the Lyceum provides a classical education and pre pares students for the university There are also a number of private colleges high schools and schools of engineering Malta University established in 1769 and organized in its present form in 1898 has the faculties of literature law medicine and theology

MALVERN COLLEGE—In 1864 a proprietary school was founded at Malvern on the model of Winchester and in the following year it was opened The buildings which stand in the out skirts of the town are a handsome structure in the Early Decorated style of English Gothic archi tecture Malvern has long been a favourite watering place and health resort it is beautifully situated about 9 miles from Worcester on the eastern side of the Malvern Hills under the Worcestershire Beacon which rises about 1 400 ft above sea level

The school consists of ten boarding houses con taining about 500 boys It is divided into three sides—classical modern and army and there is also a school of mechanical engineering

Cricket football and racquets reach a high level at Malvern Several of the masters are distinguished old athletes and the list of athletic honours among O M s grows year by year

MAMUM - AR RASHID — (See MOHAMMEDAN EDUCATION)

MANAGEMENT, CLASS—The processes of edu cation and instruction are by no means identical as between the class and the individual In root principles no doubt they are more or less the same in all circumstances the individual is still the individual even when in company The deepest psychological and pedagogical truths remain among the manifold expedients of the nursery and the school

We usually define and think of education as systematic and involving schemes and organized procedure It is in that sense something external, and of set purpose intended for effect on a grow ing mind But with infinite variation a child is

very like another child in qualities and powers that make him "human" Thus we find the possibility of economy in time and labour in teaching more than one There is economy in money too when we pay others to do the teaching and economy that in measure is apt to be proportionate to the numbers taught in single groups Here then we get the class and the school And if our aim is low and our educational ideals poor, the class may be very large A hundred children were often under a single teacher in our public elementary schools in days gone by even now we may have sixty and in the secondary school the Board of Education allow thirty and exceptionally approve of thirty five But apart from mere economy the class has its own very material advantages The sense of comradeship is valuable there may be unity of purpose and a proper and righteous emulation In important directions children will 'stretch' one another and the common effort leads to a greater individual accomplishment The sympathy of numbers is active and forceful the class is social and makes for social improvement within the range of its opportunities Mental activity, under judicious and skilful appeal is probably on a higher level and certainly operative in a wider area All this is of value for mere progress in the subjects of school instruction it is of far more importance in the training and growth of character

Essentials of Success But we assume the essentials of success *attention* on the part of the pupil and therefore *interest* and—because he is now in a class—*order* and all that is meant by *discipline* Thus class management will mean every device of rousing and maintaining interest of inviting or compelling thought and what may be called an active receptivity of presentation of the details of instruction and lastly—and to a great extent controlling the rest—of making the members of the class work together as an efficient machine and without the distractions and interruptions of calls to order and appeals for attention and indeed for good behaviour and a reasonable silence for children in bulk are very different from children in separate units in much that affects their easy and effective government At the best there must be difficulties arising out of varying age and attainment disposition and character The teacher will find not only that there is much that he cannot do but much that he should not try He will perhaps be most successful if he fixes his effort and purpose on a few things rather than many but in these he must succeed if he is to succeed at all and the greatest of these is *character* his personality will go far he must be earnest and sincere and a touch of enthusiasm is wanted for life and movement He should be *on good terms* with his class he and they should be human with real friendship rather than with familiarity He must be powerful as Father O'Flynn and as tender and if not a born *disciplinarian* must make himself one and thus with care and pains and a watchful sympathy It will not be found an easy task, yet he is bound to become efficient in control or had better give up altogether For regular and consistent discipline again a very few cardinal points may be noted as absolutely necessary *Lessons should be prepared* the "here we are again" attitude is fatal With proper preparation teaching will go on with facility and from a full mind and gaps in speech which youngsters are apt to fill to the undoing of the unready will be avoided Correct *presentation of the subject* as a whole and in detail is important Logical and natural sequence must be observed Apt allusion and illustration in speech or in picture, or in map or in diagram may be wanted everything to give life to the lesson—to excite or command attention A *frank and cordial manner* is required with some dignity but no eccentricity—a bearing and utterance as of authority There must be "ring" in the *voice* and soul and "fire" in the *eye* and each boy or girl must be looked at or talked to in rapid and repeated turn—and personally, not as an indefinite unit in the multitude There are also *devices of the profession* Education is a science and an art and has its own laws and rules For these we must search text books scholastic simply noting here that class management will often be a question of physical rest or movement of change of exercise and subject—in short of the time table

A E L

MANAGEMENT (SCHOOL) —School management is a term of somewhat ambiguous import since it may have reference to the body of school managers who guard the interests of particular schools or may refer to the body of rules governing the conduct of schools in general In ordinary usage the term is restricted to the latter of these senses and deals with the teacher's work on its professional side leaving out of count the relationships in which in theory at any rate he is the governed rather than the governor

The subject being thus limited to what may be termed its more domestic aspect concerns itself with a material and a non material side the buildings in which the scholars are to be instructed and the instruction which shall be imparted to them It is of fundamental importance that the school buildings should be specially designed for the purpose they have to serve The ease and convenience of working depend in the first instance on the judicious planning of the rooms seeing that for most of its activities the school must work in classes

Yet there are occasions when the school should be an organic whole and for these the provision of a hall for general assembly is invaluable Translated into terms of bricks and mortar the hall provides for the school as a whole the classroom provides for the constituents into which the school is divided Yet amid division there has to be a constant interchange between class and class and between a class and the school as a whole so that each classroom should be readily accessible to the other classrooms and to the school hall in which the internal corporate life of the school will be fostered

It is however in the playground that the social instincts and activities of the scholars can be given their widest scope and so it is in the playground that the earnest teacher is best able to study the individual characters of his scholars and gather materials to assist him inside the school This does not mean that he must remain merely a passive spectator in the playground He can give a new aspect to his relationships with his pupils by entering into the spirit of their games and so make use of the opportunity for substituting terms of equality for those of superiority There will be times when it is necessary for him to exert his authority in the playground Occasions will arise when those scholars who are prone to interpret freedom as licence and to regard relaxation

as the opportunity for the abandonment of all self-restraint will have allowed their rougher instincts to obtrude themselves and possibly to gain the upper hand and then the situation should be promptly dealt with

The scholars must also be trained to regard the time allowed them in the playground as serving other purposes than that of pure recreation During the interval they should be expected to attend to the necessary bodily functions so that "leaving the room" during lesson-time may be reduced to a minimum In the case of infant scholars it is highly desirable to arrange for two intervals during a session extending over two hours or longer

The transition from the freedom of the play ground to the restraint necessary in the classroom is best bridged by making the scholars fall into lines a formation which assists an orderly march into the schoolroom and the expeditious disposal of the clothing which has to be deposited in the cloak-room

Discipline The kind of discipline that should be looked for in the classroom raises considerations of the greatest moment That some order and dis cipline is necessary is evidenced by the cases of those who have to abandon the idea of following teaching as a profession because of their inability to keep order —the most frequent cause of failure among the rejected Young teachers soon learn by bitter experience the necessity for con trolling the unruly spirits in a class and often jump to the conclusion that they must deliberately cultivate order and discipline as a thing in itself they therefore adopt the devices of the drill sergeant This is a mistake which should be most carefully guarded against Order and dis cipline should be secured by incidental rather than by direct and formal means The teacher s aim should be to get his children to keep their own order and to do so as it were unconsciously They should be expected to acquire the habit and spirit of discipline so that the consciousness of restraint should hardly ever be present to their minds The experienced teacher knows full well the way to attain this end His scholars are thoroughly interested and their activities directed along such natural channels that they have no desire to set up any competing agencies of their own

There are intervals between the lessons to provide for when the children will be called upon for conscious restraint and these occasions will afford a test of the value of the previous training Though the amount of self discipline which the teacher requires should vary with such circumstances as the age of the scholars, the size of the class and the kind of homes from which the children come the working ideal in all cases is the maintenance of a just balance between intelligent liberty and tyranny the adoption of a compromise between the self assertiveness of the individual and the good of the whole

In recent years a remarkable change has come over public opinion in the matter of school dis cipline Not only has the old dictum that a sparing use of the rod tends to spoil the child been dis carded in practice but all means of repression are now closely scrutinized So far, indeed has the pendulum swung in the direction of excessive freedom, that in some schools the caprice of the individual is allowed full sway to the detriment of the general comfort of the school community

In this deference to the almost unfettered action of the individual, the school reflects the undoubted trend of modern society, which has drifted in this direction partly through the spread of de mocratic ideas, and partly through the increase of wealth and the consequent relaxation of indi vidual restraint Moreover, the work of teaching tends to fall more and more into the hands of woman whose sex instincts favour appeals to persuasion rather than to force

The basis of effective school discipline is found in the complete recognition of the teacher's authority but this is secured in a large measure by a strong personality characterized by earnestness of purpose well-marked sympathy, industry, and patience In addition the teacher should possess courage the ability to arrive at quick decisions a good voice and a "governing eye" Such a list looks formidable, but lest it should lead to discourage ment it ought to be frankly acknowledged that many of the assets are more of the nature of acquirements than gifts and can be obtained or at any rate developed, by experience

Apart from the foregoing factors that depend immediately on a teacher's personality there are other details that make for success The *comfort* of the class as a whole and of every member in the class is a matter of prime importance Each scholar should be provided with a back to the seat on which he is placed his desk should be of a height suited to his age and arranged at right angles to the window wall The blackboard should be so placed that it can be easily seen by every member of the class and the teacher in his demonstrations should be careful to place himself in the most suitable position for the purpose he has in hand

The room itself should be comfortably heated and provided with a continuous supply of fresh air It should be so planned and arranged as to secure an abundance of well diffused light and when as is usually the case the amount of sunshine varies from room to room according to its aspect the youngest children should be given the brightest room In other directions also the room allotted to any particular class should be considered in relation to its suitability to the class the largest number of children being given the largest room and so on

These external aspects of school routine are by no means negligible in their bearing on suc cessful working but because they belong rather to the physical than the purely mental side they are frequently overlooked or ignored Yet as they can be brought under more or less mechanical rules there is less excuse for their neglect

Curriculum Naturally we look for the exhibition of a teacher s chief skill in the planning of his curriculum and the carrying of it into practice The school course should not be restricted in out look to the particular department with which it is immediately concerned Due regard must be had to the other departments from which the children are drawn or to which they may be handed on

The whole of the course whether considered in its relation to all the departments interested or judged for its own department should be marked by definite coherence and unity, so that the scholars may pass naturally from one grade to another with no appreciable break or wrench

The curriculum, though planned with a vertical reference, should have also a horizontal bearing It must take account of the scholars as they are in any particular year, and not as the teacher

would wish them to be To a considerable extent the choice of subjects will depend on some outside authority but in all cases there is some elasticity left for the inside management and so far as there is liberty of action for the teacher the course of instruction should be influenced by the character of the children the homes from which they are drawn the pursuits they will follow in after life and in a lesser degree the predilections of their teachers

Quality should be aimed at rather than quantity the ability to assimilate knowledge and transform it into power being much more important than the gathering of a mass of miscellaneous material over a wide range A well planned school course is capable of producing habits of thoroughness which in the scale of national assets are of untold value

Particular care should be exercised to see that the scholars who are suspected of receiving insufficient nourishment should not be unduly pressed in school and obviously the results looked for from poor and neglected children should fall far below those expected from the children of better class homes Yet it must not therefore be hastily concluded that bodily strength and vigour indicate capacity for mental work The reverse is frequently the case

Where the school organization permits of it the children of small brain capacity should be provided with abundance of handwork so that through muscular activity the greater concreteness of the processes and the slower rate at which ideas are presented to them their brain centres may be stimulated into activity and some basis of self confidence created

The special qualifications of the staff will in some degree secure an echo in the curriculum Particularly will this be so in the matter of such subjects as music and drawing where a large part of the advance made by the pupils will depend on the specialized knowledge of the teacher

In all usual cases it is desirable to map out the curriculum into convenient portions to be worked through term by term but where some novel treatment of a subject is proposed it is sometimes difficult if not impossible to forecast the line of treatment for any considerable time in advance and in such cases each step should be allowed to evolve itself as the fruits of experience

In the actual lessons the individuality of the teacher should be allowed the utmost possible scope Of course in the more formal subjects such as handwriting there must be a consistent plan laid down for the whole school but where the subject admits of a training in intelligence the individual teacher should be encouraged to work out some special lines of approach This concession does not mean that faulty methods should be palliated nor that fundamental considerations should be disregarded (*e g* it would not do to allow the major portion of the time for English composition to be given by the younger children to written work while the older children were devoting most of their efforts to the oral formation of sentences)

Staff Closely connected with the choice of the curriculum and its development in practice is the consideration of the distribution of the staff Where there is a wide range in the ages of the scholars it is necessary to select teachers who are best suited temperamentally to deal with either the older or the younger end and this problem is simplified if both male and female teachers are appointed on the staff This however must not be taken to mean that the youngest children should be relegated to the weakest teacher "Well begun is half-done" and the first start in knowledge is of special importance so that no sacrifice should be deemed too great to see that the foundations are well and truly laid

A liberal conception of the province to be allowed a subject should be conceded All knowledge is interrelated and though an aimless rambling lesson cannot be too strongly deprecated yet undoubtedly the best time to deal with each gap in a child's knowledge is the occasion when it discloses itself Too frequently a teacher with his eye on the time table and a laudable desire to press onwards forgets how necessary it is to look behind and see that his rear is secured

Time-table The choice of the curriculum having been settled and the distribution of the staff arranged for there remains the drafting of the time table From its very nature the time table imposes restrictions which tend at times to become real hindrances The length of time to be given to the various lessons and the particular times when such lessons should be taken must be specified and this packeting of time and subject should be regarded as useful and necessary for all ordinary occasions There will however arise times—particularly in the case of young children—when it is desirable to deviate from the ordinary routine and then time table devotion may work harm A time table should bear the distinct impress of the school for which it has been planned It cannot be usefully imposed from without and though certain broad principles can be laid down for its construction it must have distinguishing features designed to meet the character of the building the staff and the course of instruction mapped out

The length of time to be allotted to a lesson in any particular subject should be considered in its relation to the ages of the scholars for whom it is intended For quite young children a lesson of twenty minutes is sufficient whereas for older children one twice or three times as long would not be out of place The name of the subject is not sufficient in itself to determine the length of a lesson Its scope and treatment should be known for the more intensive the work the less should be the time devoted to it on any one occasion

The value of the various periods on the time table must be estimated according to the time of the day and their position relative to the intervals for recreation and the mid day meal The morning session will find the children capable of greater mental effort than the afternoon the period after recreation will find them more alert than the period immediately preceding it

The lessons on the time table should be arranged on some plan of alternation and relief Quiet lessons should follow those of a noisy character A lesson which has made great demands on the scholars eyes should be followed by one in which perhaps their ears become the chief avenue to the brain and a lesson in which the teacher is required to do much talking may be followed by one in which the pupils engage in private study or employ their time in working exercises by themselves

Physical movement and culture should be made to provide an antidote to intense mental effort and the due co ordination between the bodily and

mental powers between the physical and the intellectual should ever be borne in mind

Stock. One last word remains to be said on the choice of books and other school apparatus This detail of school management again marks off the teacher who finds delight in his work from him who finds it a burden With an ever increasing supply of school publications it becomes more and more necessary that a teacher should make a wise selection At times it is possible to be led astray by the pleasing get up of a book and its beautiful illustrations and to forget that in the last instance it is the letterpress that should receive the fore most consideration All three advantages combined go to make the ideal book

Again in the choice of apparatus much room for discrimination is to be found The haphazard accumulation of stock in the expectation that it may some day serve a useful purpose is as wasteful as it is foolish The wise teacher will rather restrict himself to what is sufficient for present needs and in no case will he buy apparatus which can be made on the school premises by the scholars themselves

The weakness of a badly managed school shows itself conspicuously in loose control exercised over the use of the school stationery and other material supplied to the children and possibly few teachers utilize to the full the training in habits of care and economy which come from a prudent use of school materials

Just as habits of providence may be best taught practically in the careful use of school supplies so ideas of neatness and order can be best demon strated by attention to the general cleanliness and tidiness of everything about the school and its premises Similarly the aesthetic sense can best be fostered by a display of good artistic pictures such as appeal to a child s tastes and emotions The pleasure that these give is largely due to their power of suggestion which though subtle in origin, is none the less effective and so serves to point the moral that in school management no detail is too trivial to be overlooked and no minutiae too unimportant to be disregarded A J BERRY

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MANAGERS —(See GOVERNMENT OF SCHOOLS IN OTHER THAN COUNTY AREAS THE)

MANCHESTER, UNIVERSITY OF.—Originally founded as Owens College in 1851, under the will of John Owens a merchant of the City of Manchester who left £96 000 for the purpose of providing an institution for the education of boys over the age of 14 in such branches of learning and science as are now and may be hereafter, usually taught in the English universities The beginnings of Owens College were very humble The former residence of Richard Cobden in Quay Street, served for academic buildings and the professorial staff consisted of the first principal Mr A J Scott and six other teachers Dr Greenwood succeeded to the principalship in 1857 and continued in office for thirty-two years Succeeding principals were Dr (now Sir) Adolphus Ward , Mr (now Sir) Alfred Hopkinson K C , who continued to be Vice-Chancellor of the University till 1913 Professor Weiss who held the appointment from 1913 to 1915 and the present Vice-Chancellor, Sir Henry A Miers F R S

Extensions. For a number of years the College was in a precarious condition and it was not until about 1865 that it ' turned the corner " Thereafter development was so rapid that the old buildings were soon found to be inadequate and about 1870 an Extension Committee was formed to raise a fund for a new site and buildings A sum of about £100 000 was raised in this way and the new buildings were eventually opened in 1873 Important additions have been made from time to time including the Medical School the Beyer Laboratories (devoted to geology and zoology) the Museum the Whitworth Laboratory for Engineering the Schorlemmer Laboratory for Organic Chemistry the Christie Library (containing about 200 000 volumes) the Schunck Chemical Laboratory and Library and the Whitworth Hall Among the more recent additions are the new lecture rooms and laboratories for engineering and the John Morley Chemical Laboratories both opened in 1909 the new Botanical Laboratory, 1911 the new extension of the laboratories for physics and electrotechnics 1912 and the new Arts building, 1919 accommodating the ancient and modern language departments, literature, philosophy and history

In 1880 Owens College was incorporated in the Victoria University as the first constituent college The year 1889 brought the first parliamentary grant and a number of scholarships founded by local authorities Day training departments for men and women training for the teaching profession were established in 1890 and 1892 respectively In 1903 a charter incorporated Owens College as the Victoria University of Manchester In the same year University College Liverpool obtained its own university charter and separated from the Victoria University but Yorkshire College Leeds, remained a constituent college until it received the status of a university in 1904

Courses While the Victoria University offers degree courses in arts science, medicine and other faculties in common with the older universities it has developed strongly in what may be called modern branches of study, and was the first British university to grant a degree in commerce The departments of science and technology are also strongly organized and equipped as regards both teaching staff and laboratories Affiliated to the University for certain purposes are the Manchester Municipal School of Technology and the Royal Manchester College of Music, certain courses at these institutions being recognized as degree courses

In 1918 new Chairs of Italian and Russian were established and also a new degree the Doctorate of Philosophy designed to encourage advanced study and research in the various faculties

The following diplomas are granted by the University Teacher s, public health veterinary state medicine dentistry, psychological medicine, and geography Special certificates in factory hygiene and in school hygiene, open to holders of the diploma of public health are also offered

The authorities of the University are the chancellor vice-chancellor, pro-chancellors court of governors, numbering about ninety members,

the council, which is the executive body and consists of twenty-four members the senate, with about fifty members the boards of faculties as originally constituted by the charter, viz arts, science law, medicine and music, together with those in commerce theology technology, and education, which were added later and convocation which consists of over 2 000 members

There are many student societies including two unions one for men and the other for women, a Students Representative Council and an Athletic Union besides many smaller societies For the benefit of students living at a distance from Manchester five Halls of Residence have been established two of these being for men two for women, and one for senior medical students

MANDEVILLE, BERNARD DE (1670–1733) — A philosophical writer born at Dort in Holland and educated for the medical profession After taking his medical degree he removed to London where he practised as a physician making a poor living and being partly supported by a pension settled on him by some Dutch merchants He wrote poems and a prose treatise entitled *The Fable of the Bees or private vices public benefits* in which he put forward the view that the vices of the individual conduce to the benefit of society The work was condemned in 1723 by the Middlesex Grand Jury as injurious to morality Mandeville also wrote *Free Thoughts on Religion An Inquiry into the Origin of Honour* and a number of treatises on social subjects

MANN, HORACE (1796–1859) — 'The first great organizer of American educational forces was a native of Franklin Norfolk County Massachusetts Of a Puritan stock the family discipline was further tightened by the financial limitations of his parents Further his father died when Horace was 13 years of age Up to 16 years of age he had not more than eight or ten weeks schooling in a year He won his way to Brown University in 1816 and on graduation in 1819 studied and practised law and was a teacher for two years In 1827 he was elected a member of the State House of Representatives and in 1833 became a member of the Massachusetts Senate and was elected President in 1836 He soon became a leading progressive publicist He showed a tendency to Puritanic austerity He turned an insatiate industry into an educational current In 1837 he became Secretary to the newly established Board of Education for Massachusetts In 1848 he was elected to succeed John Quincy Adams in the Senate of the United States

Work for Education Mann's indefatigable labours in the cause of Massachusetts accomplished the establishment of well organized central town schools instead of the small district schools the lengthening of the school period of the children and improvement in the curriculums What he did for Massachusetts was followed by other States and the reputation of his work in his own Board was spread throughout America and in most parts of progressive Europe He was the initiator of educational conferences and a pioneer of educational periodicals his own *Common School Journal* securing unusual attention to educational questions He established the first Normal school recognized by a State in America at Lexington in 1839 and Cyrus Pierre the first Principal justified the new institution But perhaps the greatest service Mann rendered to education was his insight into the need of teachers to have before them all the materials for sound judgment in their profession He is the Father of State Education Reports The annual Reports to his Board on the progress made in Massachusetts became the model for other States The twelve Annual Reports were the forerunners of such classical Reports as those of Commissioner W T Harris, Superintendent of Schools at St Louis Indeed Mann advocated the establishment of a national Bureau of Education at Washington which was realized only in 1867 eight years after his death, when Henry Barnard (*q v*) became the first Commissioner of Education for the U S A

Horace Mann is also particularly associated with the idea of educational reports the result of personal visits in foreign countries for educational investigations Mann's own Report on a visit in 1843 in Germany France Holland and parts of Great Britain and Ireland was presented as part of his seventh Annual Report and afterwards re issued separately in England in 1857 (4th ed) with preface and notes by Dr W B Hodgson It should be noted that there was also a British Horace Mann, who in 1854 drew up in connection with the Census of 1851 a valuable Statistical Report on the contemporary Acts of Education in England F W

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MANTUANUS, BAPTISTA SPAGNUOLI (1448–1516) —Was a neo Latinist poet whose books were read as text books in all countries almost as widely as the classical authors themselves Thus Colet's Statutes of St Paul's School (1578) prescribe Mantuan the only other modern authors named being Erasmus's *Copia* and his *Institutio Christiani Hominis* In 1612 Brinsley in his *Ludus Literarius* recommends the use in grammar schools of Mantuanus's *Eclogues* and in 1660 Charles Hoole in his *New Discovery of the Old Art of Teaching School* says that Mantuanus's *Eclogues* "were read in most schools' They were read by children in the third form who learned an eclogue by heart six lines at a time then construed the lines then parsed them then 'picked out phrases and sentences and committed them to a paper-book then translated into free English and re translated into Latin Mantuanus's *Eclogues* derive an additional interest from the fact that Shakespeare directly quotes the first line from the first eclogue—

> 'Fauste precor gelida quando pecus omne sub umbra Ruminat —(*Love's Labour's Lost* IV ii 95)

The *Eclogues* of Mantuanus were often preferred in the sixteenth century to the *Aeneid* of Virgil Mantuanus's popularity was partly due to his attack on the abuses of ecclesiastics like Erasmus in the *Colloquia* Erasmus himself thought a time would come when Baptista would be regarded not much below his ancient compatriot of Mantua, Virgil and Erasmus's prophecy, we see was fulfilled

Biography Born in Mantua in 1448 John Baptist Spagnuoli entered the religious order of the Carmelites but withdrew from it in 1515 (a year before his death) His eclogues are included in the *Bucolica*

seu Adolescentia 1503 The eclogues are accompanied by a great copiousness of explanatory and critical apparatus As if Mantuanus were a classical author, Jodocus Badius Ascensius supplied the book with a storehouse of classical allusion—literary, geographical historical Mantuanus was translated into English by George Turbervile in 1567 and by Thomas Harvey, Gent in 1656 The subjects of the eclogues are love, religion, poets and wealthy men and the Roman Court Mantuanus's book was not probably intended for the school Coming at a time when pastoral poetry began to flourish it satisfied the demands of sixteenth century schoolmasters not only in England but also abroad He belonged to the Old Church whilst he was acceptable to its critics (As to Mantuanus in the eighteenth century see Boswell s *Johnson* [ed G B Hill] IV 182)

In the general history of literature, Alexander Barclay (1514) speaks of Spagnuoli—

> ' As the most famous Baptist Mantuan
> The best of that sort since poets first began "

Edmund Spenser wrote his *Shepherd s Kalender* (1587) as a follower of Mantuanus

F W

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MANITOBA, EDUCATION IN —(See CANADA EDUCATION IN)

MANUAL ROOMS, THE BUILDING OF.—(See BUILDINGS SCHOOL)

MANUAL TRAINING INSTRUCTOR.—In handicraft instruction we have an interesting example on a small scale of the way in which educational progress is made in England Before the Education Act 1918 made it necessary that practical instruction should be included in the ordinary curriculum of an Elementary School handicraft instruction was regarded in many Schools as a luxury outside the ordinary requirements To quote the Code of Regulations for Elementary Schools in England issued by the Board of Education in 1912 A Handicraft Centre should as a rule have its own teacher or teachers Where circumstances do not permit of the employment of a special teacher scholars may be instructed in Handicraft with the approval of the Board whether at their own School or at a Centre by one of the regular teachers of the School who if not fully qualified must have a skilled assistant ' That is to say the instruction in handicraft is not necessarily an organic part of the school work organized by the head teacher but it is the domain of a specialist who may or may not be trained as a teacher The Code has certainly demanded that ' Practical work at the benches should as a rule be done by the scholars from working drawings to scale, which should be made under the immediate supervision of the teacher of handicraft on principles which the scholar has learnt in the course of the ordinary school work ' but no means are prescribed by the Board nor does the Local Education Authority as a rule provide means for ensuring that the teacher of handicraft has a personal acquaintance with the ordinary school work Indeed it is only of recent years that the teacher in charge of the handicraft centre has been in some areas compelled by administrative regulations to consider the wishes of the head teacher of the ordinary school from which his pupils are drawn

An improvement is being brought about by the operation of a regulation which states " A teacher will be regarded as qualified to give instruction in Handicraft to scholars in Public Elementary Schools if he holds either the Teachers' Certificate in Manual Training (Woodwork or Metal work) issued by the City and Guilds of London Institute, or the Teacher's Certificate in Woodwork or Metal-work issued by the Board of Examinations for Educational Handwork " The result of this regulation is that the mere craftsman who is not a teacher has practically disappeared from the manual training centres while the number of teachers who are also craftsmen is rapidly increasing even in the ordinary schools

A boy must be more than 11 years of age when he makes his first attendance at a special class This rule was for many years construed as meaning that boys under 11 years of age should receive only the manual instruction which could be given in writing and drawing lessons During the last couple of decades the gap between the infants department and the manual training centre has been filled in by means of an extension of handicraft instruction, such as paper folding paper cutting paper rolling, clay modelling, cardboard modelling, and light woodwork

The Board of Education demands also that there must be at least one teacher for each twenty scholars working at the benches or in the case of light woodwork for each thirty scholars "

The salaries of fully qualified handicraft teachers, that is, of teachers who are certificated and have also a handicraft qualification are usually greater than those of assistant teachers in ordinary schools but a teacher in charge of a manual training centre sometimes receives a less salary than a head teacher of a boys department Probably as the manual training centre becomes more an integral part of the ordinary school there will be no special distinction in salary and prospects between the teachers employed because the same teachers will be engaged both in the ordinary school and in the manual training centre This is the more likely to be the case since handicraft has become partly a method of instruction and partly one of a group of subjects including drawing modelling and handwriting which may well form one of the specialist groups mentioned in the article on ASSISTANT TEACHER CERTIFICATED A C C

MANX EDUCATION —The story of the educational systems of the Isle of Man forms an interesting chapter in the history of British education, for in 1704 the first experiment in compulsory education in the British Isles was made there The measure enjoining this provision contained the following paragraph " All persons shall be obliged to send their children as soon as they are capable of receiving instruction to some petty school and to continue them there until the said children can read English distinctly ' Fees were charged sixpence a quarter for reading ninepence for reading and writing During harvest time, leave of absence was granted to such children as agricultural necessity claimed, but arrangements had to be made to make up the instruction they lost in this way by

giving them special teaching for at least an hour every third Sunday before evensong In 1813 the fees were increased to 2s 11d and 3s 6d respectively but soon afterwards the National Society began to make grants and these were followed by grants in aid of building and equipment first made by the Treasury in 1835

In 1872 the island Legislature consisting of the Lieutenant Governor Council, and House of Keys passed a public elementary education Act differing in certain respects from the English Act of 1870 Compulsory attendance was required non sectarian religious teaching was to be given in all schools except those maintained by the Roman Catholics and every parish or town was erected into a school district with a school board (working under the supervision of a Council of Education appointed by the Tynwald) The Act enjoined that in order to earn grants the schools should comply with certain conditions laid down by the Education Department at Westminster and so they were examined by the English inspectorate and they attain the same standard of efficiency as English schools of the same type Fees were abolished in 1892 In the year 1906 the number of elementary schools was forty seven of which five were denominational the others being managed by the school boards

The first higher grade school was opened at Douglas in 1894 but it was not until 1907 that the Act was passed by the Legislature establishing a system of secondary education throughout the island There are grammar schools at Douglas, Ramsey and Castletown and in 1833 King William's College was founded—a public school run on English lines which has achieved a high reputation and attracts many pupils from the North of England as well as from among the middle and upper classes of the resident population

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MAPS AND MAP-PROJECTIONS —Our ordinary notions of distance and direction are really based upon the assumption that the earth is flat So long as we are concerned only with a small portion of the globe the assumption is practically correct but when we consider larger areas it is necessary to revise our ideas Maps being themselves flat are not adapted to help us in this respect and a little preliminary study of a terrestrial globe is desirable

The shortest distance between two points on a sphere measured on the surface of the sphere is along the great circle which passes through both and it is this that we usually mean when we speak of a straight line on the earth

The direction or bearing of any line upon the earth is defined by the angle that it makes with the meridian and perhaps the most widely spread of all geographical misconceptions is that the bearing of a "straight line on the earth remains the same throughout its length It will be found however on stretching a thread between two distant points on a terrestrial globe that the thread does not in general cut the meridians at a constant angle It lies along a great circle and the only great circles that have a constant bearing are the meridians and the equator

A useful exercise which may be carried out on a terrestrial globe or almost equally well upon an ordinary map of the polar regions is to draw a line making some fixed angle such as 45° or 60°, with each of the marked meridians as it comes to it It will then be seen that all lines of constant bearing, except the meridians and parallels are spirals Such lines are known as loxodromic curves

The same exercise will also serve to remove another prevailing misconception viz that 'straight lines which have the same bearing are parallel to each other It may be observed in passing that a study of the meridians and parallels in an ordinary map of the polar regions will help to remove most of the misconceptions which tend to arise from the use of maps on Mercator's projection

The position of a point upon the globe is determined by its latitude and longitude and a map projection is a method of constructing the net work or graticule, of meridians and parallels by reference to which the details of the map are drawn

Conditions for a Perfect Map In a perfect map the following conditions would be fulfilled—

1 Distances from point to point on the map would be proportional to the corresponding distances on the ground In other words the scale would be the same throughout the map

2 Directions or bearings from point to point on the map would be the same as the corresponding directions on the ground

3 Areas on the map would be proportional to the corresponding areas on the ground

Since however no segment of a spherical surface can be spread out flat without stretching some parts or compressing others it follows that neither of the first two conditions can be completely satisfied upon a flat sheet of paper No map upon a flat surface can have the same scale throughout and no map can preserve all angles unaltered

It is however possible to construct the graticule in such a way that elongation in one direction is balanced by compression at right angles to it and consequently the areas are unaltered A projection that has this property is called an *equal area* or *equivalent* projection

It is also possible to make the elongation at each point the same in all directions although not the same as at every other point In that case so far as measurement can detect in any small area the proportions will be preserved Each little section of the map is in fact correct in itself but it is not on the same scale as other little sections elsewhere This property is called *orthomorphism*

It is evidently possible to place all points at their correct distances from some selected point which is usually made the centre of the map A projection in which this is done is called *equidistant* Instead of this the scale may be made correct along certain specified directions such as meridians and parallels

No projection however can combine all these qualities and accordingly the choice of a projection for any particular map should depend upon the purpose of the map

Very few of the map projections in ordinary use are projections in the geometrical sense Most of them indeed are based upon a geometrical projection of some kind but the strictly geometrical projection is usually modified in some way in order to approach more closely to the fulfilment of one or other of the conditions for a perfect map

The projections commonly used for maps of continents or countries may be divided into three main classes viz —

(1) Conical
(2) Cylindrical
(3) Azimuthal or Zenithal

1 **Conical Projections** In all the usual conical projections the parallels of latitude are concentric circles In the simpler forms the meridians are straight lines which cut the parallels at right angles, but in some modifications only the central meridian is straight while the rest are curved and are not at right angles to the parallels

In order to understand the general principle of these projections we may begin by imagining a terrestrial globe on the same scale as the map that we wish to construct and also a sheet of paper twisted into a cone large enough to slip over the globe If the cone is rested on the globe with its apex immediately over one of the poles in line with the axis the cone will touch the globe along a parallel of latitude and by altering the angle at the apex the cone may be made to touch at any particular parallel that may be selected Suppose

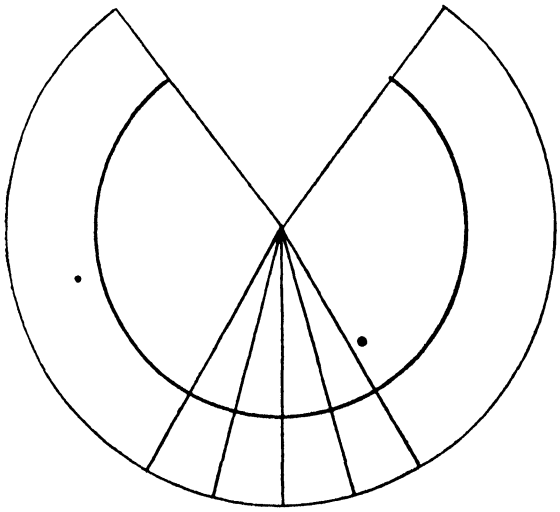

Fig 1

that the angle is so adjusted that the cone touches along the central parallel of the area which is to be represented This is called the "standard parallel and since it is in actual contact with the cone we may imagine it transferred to the paper without alteration Moreover the points where the meridians that are to appear on the map cut the standard parallel may also be transferred to the paper without alteration Straight lines are drawn from the apex of the cone through these points and if the cone is now opened out the lines will appear as in Fig 1

The standard parallel becomes an arc of a circle with its centre at the point that was the apex of the cone and the radiating lines from this centre are taken as the meridians In the *simple conical projection with one standard parallel* (Fig 2), the remaining parallels are now drawn as circles with the same centre as the standard parallel and at the same distance apart as they are on the globe

From the method of construction it will be evident that along the standard parallel and along the meridians the scale is the same as that of the globe But along the other parallels it is too great for they form larger circles on the cone than on the globe The areas also are too great and the error, both of parallels and areas increases with the distance from the standard parallel

Consequently the projection is best adapted for regions that have no great extent in latitude It is easy to construct and is commonly used for countries in the temperate zones It is quite satisfactory for a map of Europe, but is not so suitable for the other continental maps on account of their greater extent in latitude

Bonne's Projection The most widely used modification of the conical projection is that invented by Bonne (Fig 3) In this the central

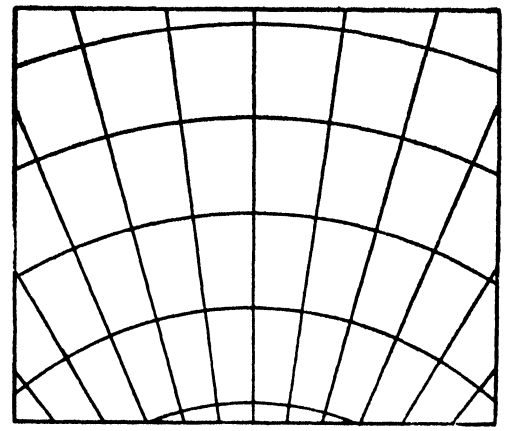

Fig 2

meridian and all the parallels are constructed in the same way as in the simple conical projection with one standard parallel But the other meridians are drawn so that their distances from the central meridian measured along *each* parallel, are the same as on the globe Accordingly the scale along the parallels and along the central meridian is correct but the other meridians are curved and the scale along them is too great Since the parallels are true to scale and the vertical distance between

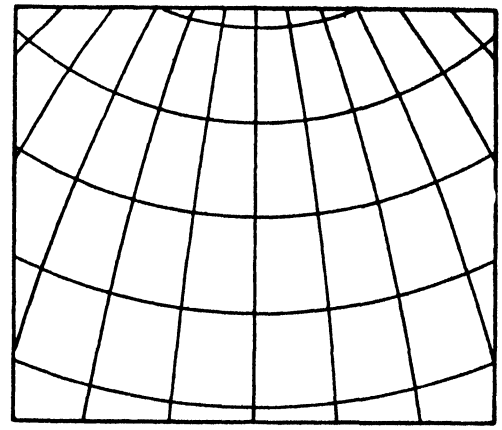

Fig 3

them is correct it follows that the areas also are correct, and this is the special advantage of Bonne's projection Its chief disadvantage is that the meridians are not in general at right angles to the parallels and the obliquity increases as we recede from the central meridian and the standard parallel Consequently if the region represented is large, the distortion becomes very marked towards the corners of the map

Bonne's projection is very commonly used for maps of Europe Asia North America and Australia, and also for smaller areas It is sometimes used for the map of South America but, since it makes the equator curved a cylindrical projection is generally preferred

2 **Cylindrical Projections.** In all the usual cylindrical projections the parallels of latitude are straight lines parallel to one another

In the conical projections as the standard parallel is taken nearer and nearer to the equator the cone becomes longer and longer until finally when the equator itself is the standard parallel the cone is of infinite length or in other words it becomes a cylinder touching the globe at the equator The cylindrical projections bear the same kind of relation to such a cylinder as the conical projections to the cone though the modifications adopted are not in all cases the same

We may imagine the equator and meridians marked upon this cylinder in the same way as we imagined the standard parallel and meridians

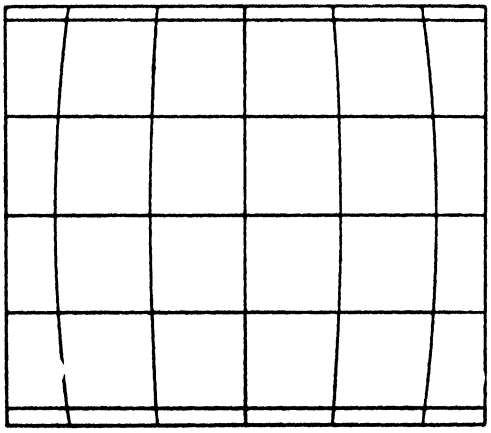

Fig 4

marked upon the cone in the simple conical projection When the cylinder is opened out the equator will be a straight line equal in length to the equator on the globe and the meridians will be straight lines at right angles to the equator and consequently parallel to one another At the equator they will be at the same distance apart as on the globe If the other parallels of latitude are now drawn at their actual distances from the equator we shall have the cylindrical projection corresponding with the simple conical projection with one standard parallel

The Sinusoidal Projection The projection just described is called the *projection plate carrée* but is so seldom used that it has no English name It may however be modified according to the principles of Bonne's projection and in this form it is known as the *Sanson Flamsteed* or *Sinusoidal* projection (Fig 4) and is very widely employed The equator is a straight line and the other parallels of latitude are straight lines parallel to it and at their true distances apart The central meridian is a straight line at right angles to the parallels The other meridians are drawn so that at each parallel their distances from the central meridian (measured along the parallel) are the same as on the globe They are curves which cross the equator at right angles but are oblique to the other parallels

Accordingly as in Bonne's projection the scale along the parallels and along the central meridian is correct, and the areas also are correct, but the scale along the other meridians is too great The projection in fact, has the same characters and the same advantages and disadvantages as Bonne's projection It is commonly used for maps of Africa and South America and for the equatorial regions in general

Mercator's Projection The only other cylindrical projection often met with in atlases is Mercator's If we consider the *projection plate carrée* in its simplest form it will be evident that the scale along the equator and along the meridians is correct but since the meridians do not converge the scale along the parallels increases as we recede from the equator We may, however by spacing the parallels differently alter the scale along the meridians in any way that we like In Mercator's projection the parallels are so spaced that as we recede from the equator the scale along the meridians increases at the same rate as the scale along the parallels At any particular point therefore we may say that the scale along parallel and meridian is the same Moreover since the meridians and parallels are at right angles (as they are on the globe) the scale in any other direction at this point will be the same and lines drawn from it in any direction will make the same angles with the meridians and parallels as the corresponding lines do on the globe This is the particular merit of Mercator's projection All straight lines upon it are lines of constant bearing but except in the case of the meridians and the equator they do not correspond with 'straight lines' on the globe (*i e* with great circles) On account of this the projection is responsible for many misconceptions and it has the further disadvantage that it greatly exaggerates the areas of regions in high latitudes

3 **Azimuthal or Zenithal Projections** In the zenithal projections generally both the parallels of latitude and the meridians are curved but they are not arcs of circles In the particular case however in which the map is centred on either pole the parallels are concentric circles and the meridians are straight lines

In the conical projection as the standard parallel approaches the pole the cone becomes flatter and flatter until when the pole itself is the standard parallel the cone becomes a plane touching the pole If the meridians are drawn on this plane as tangents to the actual meridian circles on the globe they will be straight lines radiating from the pole and making the same angles with one another as the real meridians at the pole

If the parallels are now drawn as circles with the pole as centre and at the same distance apart as on the globe we have the *zenithal equidistant* projection The scale is correct along the meridians but along the parallels it is too great and increases with the distance from the centre

It follows also that the areas are too great But, by modifying the distance between the parallels we may decrease the scale along the meridians and this may be done in such a way that at any point the scale along the meridian is inversely proportional to the scale along the parallel In that case the product meridian × parallel which determines the area will be correct and the areas will be correct This is the principle of the *zenithal equal area* projection The parallels become closer together as we recede from the pole

Up to the present we have imagined that the plane on which the projection is constructed touches the globe at the pole But it is evident that a similar projection may be constructed on a plane touching the globe at any other point In that case however the radiating lines will not be meridians and the concentric circles will not be parallels In most forms the meridians and parallels are curves but not circular curves

GNOMONIC PROJECTION The *gnomonic* is a zenithal projection in which each point on the globe is transferred to the tangent plane along a ray proceeding from the centre of the globe It is accordingly a strict geometrical projection and it has one unique and important property All great circles on the globe become straight lines on the projection and *vice versâ* Hence it is the one projection on which any straight line between two points corresponds with the shortest distance between them But away from the centre of the map the distortion increases very rapidly and accordingly the projection is seldom used in atlases Occasionally however it is employed for the map of Africa

World Maps GLOBULAR PROJECTION For maps of a hemisphere a very simple construction called the *globular* projection is commonly used A circle is drawn of the required size and two diameters at right angles to each other are taken as the equator and the central meridian respectively The equator is divided into equal parts and the meridians are drawn as arcs of circles passing through the points thus obtained and the poles The central meridian and each half of the circumference are also divided into the same number of equal parts and the parallels of latitude are arcs of circles drawn through corresponding divisions on the central meridian and the circumference

This projection is very artificial and is not correct with regard to distances bearings or areas A zenithal equal area projection is accordingly now often preferred

MOLLWEIDE S HOMALOGRAPHIC PROJECTION For the whole world in a single map Mercator's projection is the most popular But on account of the way in which it exaggerates areas in high latitudes many atlases now use Mollweide's *homalographic* projection This is elliptical in shape and as usually drawn the equator is the major axis and the other parallels are straight Its great advantage is that it is an equal area projection its principal defect is the marked distortion towards its margin

The stereographic and orthographic projections both of which are true geometrical projections are often described in text-books but in practice they are very seldom used for maps A similar remark applies to the other perspective projections in which the centre of projection lies outside the sphere

P L

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MAORI EDUCATION —(See NEW ZEALAND, EDUCATION IN)

MARBURG UNIVERSITY (in Hesse) —This was founded in 1527 as the first Protestant German university It became a central institution for the reformed Lutheran doctrines and afterwards of Calvinism After the Thirty Years War the University which had been falling into decay was re-established, and, though of small size, flourished as a denominational institution until Hesse became a part of Prussia in 1866 It then came under Government control, and has since been a favourite resort for foreign students of language and philology It maintains the usual four faculties, and is generally attended by about 2 000 students

MARCONI OPERATOR, THE SPECIAL EDUCATION OF A.—All persons operating wireless telegraph apparatus on board ships registered in the United Kingdom must hold (in accordance with the regulations annexed to the International Radiotelegraph Convention) either a first or second class certificate of proficiency in radio-telegraphy the qualifying examinations for which are conducted, and the certificates issued by H M Postmaster General Particulars of the examinations are given in the *Handbook for Wireless Telegraph Operators* published by H M Stationery Office and the average student having no previous knowledge of either electricity or telegraphy is able to obtain a first class certificate after undergoing a course of about nine months duration in a wireless telegraph school

The examination subjects are Sending and receiving manipulation and theory of the apparatus and commercial wireless telegraph procedure The candidate must be able to send on a Morse key and receive by sound messages in the International Morse Code at a rate of not less than twenty words a minute in order to qualify for a first class certificate and not fewer than twelve words a minute for a second class Good handwriting is essential The portion of the examination dealing with commercial procedure (according to the hand book previously mentioned) is usually conducted during the telegraphy test

The candidate must be thoroughly familiar with at least one set of apparatus ordinarily used in some well known system of wireless telegraphy, and during the examination he is required to operate and adjust this set and trace and rectify any " faults " such as may be likely to occur in practice The theoretical part of the examination is oral and non mathematical but the candidate must show that he possesses a good general knowledge of the principles underlying the functioning of modern apparatus and a sound knowledge of the theory of the set on which he is being examined

As generally speaking the purpose of the transmitting apparatus is to produce and control oscillating current and that of the receiving apparatus is to detect feeble oscillating currents the student s electrical studies must comprise electricity and magnetism (direct alternating and high frequency currents) only however, in their application to wireless apparatus

If the possessor of a certificate then enters the employ of a wireless telegraph company he may be required to undergo a further course of instruction in repair work and that company's special apparatus methods of accounting etc on the completion of which course he would be considered sufficiently proficient to serve as an assistant operator at sea

An operator on a land wireless station is not required to be in possession of a P M G 's certificate the qualifications necessary for such positions depending upon the requirements of the controlling administration It may, however, be taken as a general rule that the applicant for an appointment

on a shore station should be familiar with automatic telegraph working and sound reception, and be capable of attaining a higher speed in sending and receiving than is required for a first class certificate but need not necessarily reach an equal standard in theory and knowledge of the apparatus

MARIA THERESA AND EDUCATION—The reforms carried out by Maria Theresa were inspired by a desire to support the greatness of the State and to create good servants for it The improvement of education therefore received her attention Steps were taken to re organize the primary schools under a central authority In 1747 the schools in the Tyrol were regulated and a general order was issued that schoolmasters were to be chosen from experienced and respectable men A well arranged system of examinations was established for the gymnasiums (secondary schools) and a plan set on foot for organizing technical education in order to improve the work of the manufacturing classes A great innovation was the introduction of laymen as instructors at a time when all the education of Austria was in the hands of the Jesuits or the Piarists Thorough reforms were instituted in the universities the status and salaries of professors were raised to attract able men and better methods of instruction were introduced and insisted upon Universities ceased to be independent corporations and became a department of the State, which took control of their property and revenues Great improvement at once resulted although the changes restricted independence of thought and action

MARINE BIOLOGICAL LABORATORY, PLYMOUTH, THE—In consequence of the interest aroused by the London International Fisheries Exhibition of 1883 a movement was started to found marine laboratories on the British coasts so that questions relating to the biology of the sea might be adequately investigated This movement initiated by Sir Ray Lankester F R S resulted in the formation of the Marine Biological Association in 1884 Sufficient funds were raised by private donations with financial help from Government and the grant at nominal rental of a commanding site on Plymouth Hoe to build and equip the first laboratory at a cost of some £12 000 Mr Walter Heape F R S acted as Superintendent until the building was opened in June 1888 Professor G C Bourne F R S being the first Director and Mr J T Cunningham the first Naturalist In 1895 Dr E J Allen F R S became Director and has held office since that date

Fishery investigations were undertaken in the North Sea from 1891 to 1896 Mr L W L Holt carrying on the work at Grimsby with a laboratory at Cleethorpes From 1902 to 1910 the Association had charge of the English portion of the biological work connected with the International Investigations of North Sea Fisheries and a laboratory was established at Lowestoft in charge of Professor Walter Garstang

The affairs of the Association are managed by a Council composed of leading biologists and others interested in fishery matters including representatives of the Fishmongers Company the Universities and the British Association Sir Ray Lankester has been President of the Association since 1890 and Dr A E Shipley F R S Chairman of Council since 1906 The income of the Association is derived from grants from Government and the Fishmongers Company and from subscriptions from public bodies and private individuals

The Plymouth Laboratory the headquarters of the Association is well equipped for its work In the laboratory proper about twenty research workers can be accommodated The Aquarium open to the public is fitted with large tanks used both for experimental work and for the exhibition of the larger fishes and invertebrates

One of the most valuable possessions of the laboratory is the Library containing an extensive collection of books on marine zoology the reports of the principal exploring expeditions and a very complete set of reports on the sea fisheries of the world

The laboratory possesses a steamer the *Oithona* of 69 tons gross for work at sea as well as smaller collecting boats From 1902 to 1910 the specially fitted steam trawler *Huxley* was used for exploring the North Sea fishing grounds and the English Channel

Scope of the Work Attempted The *personnel* employed at the laboratory consists of seven scientific workers a chief laboratory attendant with three assistants an engineer and the captain and crew of four of the steamer *Oithona* From thirty to forty visiting naturalists occupy research tables in the laboratory in the course of each year In addition a students class is held at Easter for about twenty university students Another useful branch of work is the supply of living and preserved marine animals and plants to educational institutions museums and private research workers

It is impossible to give here more than a brief indication of the many lines of research which have been carried out in the laboratory Practically every group of invertebrate animals and of marine plants has been studied by specialists working from different points of view Attention has been given to their local distribution the conditions under which they live their food habits life histories and rates of growth besides their structure and development The local and seasonal distribution of the plankton has been studied— plankton being the name used for the small floating organisms which form the fundamental food supply of fishes and higher marine animals

Such investigations have a very important bearing on practical problems connected with the sea fisheries which it is one of the objects of the laboratory to study At the same time constant researches have been carried on which have a still closer relation to these problems and to the collection of information upon which a rational regulation of the fisheries can be based Amongst these the following may be selected for special notice—

1 Reproduction and development of fishes, determination of the characters of egg larva and young with experiments on rearing fishes in captivity and on their rate of growth in confinement and in the sea

2 Size at which maturity is reached in different species the variations which this relation undergoes in different localities the characteristics of local races of fish

3 Food supply and sense organs of fishes, with experiments on their methods of feeding and on the manufacture and employment of artificial baits

4 Distribution of flat fishes at different stages of growth their migrations destruction of immature fish on particular grounds, or by particular methods of fishing

5 Natural history of migratory pelagic fishes including pilchard anchovy and mackerel with reference to their reproduction racial peculiarities and the extent and direction of their migrations

6 The relation between distribution seasonal migrations and varying abundance of fishes and the physical conditions of the sea

From what has been said it will be seen that the work of the laboratory covers a very wide field of research which is capable of almost unlimited extension according to the means placed at the disposal of the Association for the purpose

E J A

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MARINE ENGINEER, HOW TO BECOME A — The principal requirements for those who wish to become marine engineers are physical fitness and an aptitude for mechanics Colour blindness is not as it is in the case of those who aim at navigational positions an insuperable bar nor will a certain amount of deafness be objected to provided it can be shown that the infirmity will not interfere with the proper performance of professional duties Another important concession is that when the time comes for examination candidates afflicted with nervous impediment in speech may write their answers to *viva voce* questions —to quote the Board of Trade statement It is as well to know at the outset of these concessions so that would be engineers who suffer only slightly may not feel that they are shut out entirely from the profession

Four years training at least is necessary under the regulations which came into force at the beginning of 1915 the time will probably be a year or two more for most candidates At the end of the preliminary training the candidate can be examined for a second class engineer s certificate and he must after passing it serve eighteen months or longer in certain circumstances before he can sit for his first class certificate without which he cannot become chief engineer of a first class steamship Beyond the first class certificate there is the "extra

This examination the regulations state 'is voluntary and is intended for such persons as wish to prove their superior qualifications The big liner companies prefer that their chief engineers should have obtained the extra

Stages of Training Every intending marine engineer should if he can at the outset put in a year or two at the day classes of a technical school approved by the Board of Trade evening classes do not count This will give him a good grounding for his period of apprenticeship or journeymanship—journeyman s time being equivalent to apprenticeship The period of apprenticeship or journeyman ship must not be less than four years but no time worked under 15 years of age will be counted officially Any engine works will not do Work shop service must be performed in works where steam engines boilers etc are made or repaired Two years at least of the apprenticeship must be devoted to fitting erecting or repairing engines or machinery and the remaining two years may be spent similarly or at certain other branches of engineering work these however do not count as full time and the time which may be devoted to them is limited Should the apprenticeship be extended to five years or more the Board of Trade may accept for qualification purposes, four years at turning if the four years be followed—not preceded—by one year spent at fitting or erecting

Not every town has works where the special kind of training can be given and the Board of Trade has therefore made another concession in any case the service must be rendered in a workshop where engines are made even if the works are not devoted to steam or marine engines the Board will require a special report upon the service and will also require additional engine-room or marine-engine workshop experience If the Board accept this service an additional year of qualifying service is required Two courses then are open following the four years workshop service there must be either two years at sea on regular ' watch or one year at engine fitting and one year at sea in the engine room The sea service should if possible always be performed in a foreign going steamer it takes longer to qualify to sit for examination if the service is performed in a vessel in the home trade and a good deal longer still if the service is performed in lake or river vessels Sea service may under certain conditions be performed in sea going steam dredgers fishing boats tug boats or pilot vessels

As internal combustion engines are becoming larger and more powerful and the number of motor propelled vessels is increasing intending marine engineers should also obtain their motor engine certificates The workshop service for these certificates must be performed in works where internal combustion engines are made or repaired But until 1st January 1922 workshop service in works where steam engines boilers etc are made or repaired will be accepted as qualifying for a motor certificate after that date the new rules become operative It is only a temporary concession and the chief Examiner of Engineers must be informed before examination and additional qualifying service will be required Sea service is paid for The various forms of service should be continuous gaps between them must be accounted for before the examination is held and satisfactory testimonials as to good conduct and industry are indispensable

R A F

Reference—

"Regulations Relating to the Examination of Engineers in the Mercantile Marine" (Issued by Board of Trade)

MARINE ENGINEERS, THE INSTITUTE OF — This was founded in 1889 to promote the science and practice of marine engineering to promote meetings and interchange of ideas among marine engineers and to maintain and improve the status of the engineers and their profession The Institute is composed of Members Associate Members Associates Graduates Companions and Honorary Members

A Member must be an engineer possessing a first-class Board of Trade certificate and must have occupied a position as engineer in connection with marine engineering

An Associate must be by education and experience an engineer engaged in marine engineering or an occupation connected therewith

Graduates are apprentices of at least three years' standing who propose to follow the occupation of marine engineering

The council elects as Companions persons of various professions and occupations related to mechanical engineering

The premises of the Institute at 58 Romford Road Stratford E provide a meeting place for members and visitors may under certain conditions be introduced Refreshment and recreation are provided and the reading room library and billiard-room are open to members daily except on Sundays Members are encouraged to write papers of interest and to make contributions to the museum Meetings are held one or more each month from September to March and during summer months visits are paid to great engineering and manufacturing works

MARION, HENRI (1846 1896) —A French educator and the first Professor of Education at the Sorbonne His work at the University of Paris had a powerful influence on educational methods there As a teacher he was successful and popular and advocated national education directed towards the improvement of moral character and the moral well being of the nation For some years he had taught psychology at the Normal School at Fontenay and he published in 1881 *Leçons de Psychologie appliquée à l Education* He took an active part in the organization of secondary education for girls and wrote *L Education des Jeunes Filles* and *La Psychologie de la Femme*

MARINUS, POPE (882–884) —He is chiefly interesting in the story of English education from the fact that Alfred the Great in the year 884 induced him to free the Saxon school at Rome from tribute (See ROME ENGLISH SCHOOL AT)

J E G DE M

MARKING —(See CORRECTION OF ERRORS)

MARLBOROUGH COLLEGE —Founded in 1843 two years later Marlborough College was incorporated by royal charter and received a further charter in 1853 The college buildings occupy a famous old coaching and posting hostelry—*The Castle Inn*—which forms the background of one of Mr Stanley Weyman s historical romances Many additions have of course been made to the original premises and the College itself now accommodates about 430 boys who are boarded on the hostel system under the charge of eight house masters Besides these there are about 270 boys who live in private boarding houses belonging to certain of the senior assistant masters Seventy four of the boys living in college are foundation scholars there is a bias in favour of the Anglican clergy whose sons are admitted on reduced terms and are alone eligible for certain prizes and exhibitions besides the foundation scholarships there is however a large endowment which provides rewards and auxiliary maintenance for all alike The College is divided into two schools the Upper and the Modern The former is chiefly preparatory to the university and is therefore mainly classical There is also an Army Class Transfer from the Upper School to the Modern is conditional on the passing of an examination admission to the Army Class is also competitive Boys who fail to obtain removes at certain stages and so fall behind their contemporaries are superannuated All this leads to a high standard of efficiency and great success in the lists There are over forty assistant masters

In 1886 a new school chapel was erected in the Early Decorated style at a cost of £30 000 It is a structure of great beauty

MARTINEAU, HARRIET (1802–1876) —The daughter of a Norwich manufacturer, she received a good classical education and began to write articles at an early age for religious periodicals In 1831 she began to carry out her plan of writing a series of stories illustrating the principles of political economy The first was published in 1832 and at once became popular These *Illustrations of Political Economy* suited the public taste of the time and secured the writer a competence which she was able to maintain by a large quantity of miscellaneous work carried on throughout the remainder of her life She wrote many children s books of which the best is *Feats on the Fiord* After two years in America (1834–1836) she wrote *Society in America* and a novel *Deerbrook* in which she displayed a good faculty for narrative After 1845 she lived at Ambleside and continued to write didactic tales on social and political topics A visit to Egypt and Palestine resulted in *Eastern Life* (1847) Her later writings on religious matters are tinged with somewhat aggressive agnosticism She continued her contributions to daily and weekly newspapers and the larger reviews till late in life and prepared her *Autobiography* which was published in 1877

MARTINEAU, JAMES (1805–1900) —A brother of Harriet Martineau born at Norwich belonged to a family of Huguenot refugees who settled there about 1695 He was educated at Norwich and Bristol and at York (1822–1826) studied for the Unitarian ministry After a period of ministry he became in 1841 Professor of Mental and Moral Philosophy at Manchester New College From 1868 to 1885 he was principal of the college after it had been transferred to London He was one of the profoundest thinkers and most effective writers of the second half of the nineteenth century and for some years was a prominent member of the Metaphysical Society which then included Huxley Froude Lubbock and Dean Stanley He was also a powerful preacher and in theology secured fame by his *Endeavour after the Christian Life* (1843–1847) In philosophy and theology he accepted nothing without question and an appeal to reason and in politics he opposed the prevailing utilitarian spirit of the century His works are chiefly on religious subjects and include *Hymns of Praise and Prayer* (1874) and *A Study of Religion Its Sources and Contents* (1888)

MASONIC INSTITUTION FOR BOYS, ROYAL — In July 1798 a meeting of Ancient Masons took place to establish a Masonic Charity for educating and clothing the sons of indigent Freemasons A subscription was opened for the purpose and six children were put upon the establishment The children were clothed and put out to school in the neighbourhood of their homes at the expense of the Institution the funds not being great enough at first to provide for the erection of a school which was the hope of the directors

The Modern Masons organized a somewhat similar institution in 1808 and in 1817 the two institutions were united In 1832 King William IV became patron and the prefix " Royal was added to the title of the Institution Until the Jubilee Festival in 1848 the lack of funds prevented the

Institution from building a school and the number of children aided did not exceed seventy annually In 1852 a building fund was started and in four years it became possible to purchase Lordship House at Wood Green in the northern suburbs of London, and adapt it to the purposes of a boarding school, where the seventy children were admitted in 1857 From this time year after year the funds collected at the annual festivals increased and large sums were laid out in improving and extending the school The original building was pulled down in 1865 and a new school of greater proportions opened giving accommodation for 150 boys a number which subsequent additions to the building increased to 265 There were also forty boys boarded out The growth of London towards Wood Green led the Board of Management to sell the Wood Green Estate in 1901 to the Home and Colonial School Society for use as a training college for women

The Present School At the Centenary Festival in 1898 when Queen Alexandra (who was then Princess of Wales) presented prizes to the boys a record subscription of £141 000 was obtained and an early result was the erection of the new school buildings at Bushey near Watford in Hertfordshire This school was opened in January 1903 and accommodates 400 boys

The school is recognized by the Board of Education as an efficient secondary school and provides education leading to university and professional examinations

The age limit for election to the benefits of the Institution is 12 years Children between 6 and 10 are placed at schools near their homes Boys are usually admitted on the results of the votes of subscribers but, since 1910 large numbers have been admitted without election including many whose fathers lost their lives in time of war Boys may become candidates at 5 years and be admitted at 6 A limited number are retained after 15 for higher education and many ex pupils are assisted with grants for their advancement in life A subscriber of half a guinea obtains one vote for one election Larger subscriptions procure more votes in proportion to the amounts subscribed

MASONIC INSTITUTION FOR GIRLS, ROYAL — Under the title of The Royal Cumberland Freemason School this Institution was founded in 1788 at Somers Place East near the site of what is now St Pancras Station The title was assumed by permission of the original patron and patroness the Duke and Duchess of Cumberland The Duke was at that time Grand Master of the Modern Grand Lodge The establishment of the school which was to provide accommodation for fifteen girls was due to the Chevalier Bartholomew Ruspini founder of the Nine Muses Lodge He was the first treasurer of the Institution and remained on the management till his death in 1813 In 1795 the school was moved to St George s Fields on the south side of the Thames and premises erected on some land obtained from the Corporation of the City of London The number of girls was increased to thirty and in 1816 was sixty five

Another removal occurred in 1852 when a new school was opened on the border of Wandsworth Common near Clapham Junction station Here from time to time more land has been purchased and additions made to the buildings till in 1915 accommodation was provided for 277 girls and a resident staff and servants The Alexandra Wing was opened in 1878 and the Alexandra Centenary Hall in 1891 both named after the Princess of Wales of that time In 1918, a Junior School was opened at Weybridge to accommodate 60 little girls between the ages of 7 and 10 and a sanatorium and infirmary were added Besides those in residence many others are maintained and educated near their own homes and others receive grants for special education after leaving the Institution

Girls are eligible for admission between the ages of 7 and 11 and in the ordinary course remain till the age of 17 Candidates for admission must be daughters of deceased or distressed Freemasons and are either elected or nominated Many have been admitted in recent years without election Out-education is provided on nomination without election and grants varying from £15 to £35 per annum are made to girls of ages between 6 and 15 and may be extended to 17

The Institution provides a sound education including shorthand typewriting pianoforte swimming domestic work needlework dressmaking and cookery With few exceptions the whole of the resident staffs of the Institution have been educated in the school

On the outbreak of war in August 1914 100 special naval and 100 special military nominations for out education and maintenance were established to enable the Institution to include promptly under their scheme children of Freemasons who might be killed or totally incapacitated while serving their country These were subsequently increased to 400 and extended to the Royal Air Force

The address of the Secretary of the Institution is 21 Great Queen Street London, W C 2

MASTER OF METHOD —An important part of the work of a training college for teachers is to provide instruction in methods of teaching and practice in the art of teaching A practising school was therefore attached to all the early training colleges and in many cases the head master of the school supervized the teaching practice of the students and also delivered lectures in the college on the science and methods of teaching In some cases the master of method was only a lecturer In many modern training colleges the master of method has been superseded by a Professor of Education who lectures on the theory of education while the teaching practice is under the supervision of the master of the practising school

MASTERS IN SECONDARY SCHOOLS, INCORPORATED ASSOCIATION OF ASSISTANT —This association founded in 1891 and incorporated in 1901 aims chiefly at promoting education generally from the national standpoint and particularly from the point of view of secondary education and endeavours to further the interests of assistant masters in secondary schools Membership is open to masters in secondary schools public or private but assistant masters temporarily disengaged are eligible The journal of the association the A M A is published monthly except in April and August A general meeting is held annually

MATHEMATICAL ASSOCIATION.—This association was founded in 1871 as the Association for the Improvement of Geometrical Teaching Its chief aim is to form a strong body of masters and mistresses who are interested in promoting good methods

of teaching mathematics The organ of the association the *Mathematical Gazette* is free to members A general meeting is held annually

MATHEMATICAL SOCIETY, THE LONDON — This society is established for the promotion and extension of mathematical knowledge Meetings take place monthly at Burlington House London W and papers on mathematical subjects are read and followed by discussions sometimes collections of models or other objects of mathematical interest are exhibited

There is a mathematical library for the use of members who may also consult the library of the Royal Astronomical Society The proceedings of the society are issued in parts about one volume being published annually

MATHEMATICAL THEORY, THE SIGNIFICANCE OF —Some few years ago Prof Percy Nunn suggested that the motives which give rise to mathematical activities in the human mind may be classified as the utility motive the wonder motive and the systematizing motive

The earliest forms of mathematics consisted mainly in simple arithmetic and originated from the utilitarian motive The decimal system sprang from the method of counting on fingers and the belief that 7 was the perfect number can easily be understood by any one who places seven apples marbles coins or other objects in a round group But in the early writings of the Babylonians and Egyptians we find properties of vulgar fractions studied in a way that could hardly be required for the commercial requirements of the age As an example we may quote the first chapter of the British Museum Rhind Papyrus which deals with the division of 2 by different odd numbers the results being expressed as sums of the fractions having unity as their numerator which were the only fractions (except $\frac{2}{3}$) for which a notation then existed We here have evidence that both the wonder motive and the systematizing motive had greatly influenced the author But the utilitarian motive crops out in the second chapter where the writer deals with the division of loaves of bread for example the division of 9 loaves between 10 persons

While the method of long multiplication commonly practised is clumsy and laborious the Hindoos have always used a system which is shorter and more certain and involves no carrying

The name Geometry signifying land measurement suggests the utility motive from which originated the main mathematical developments of the Greeks while the desire to seek out new truths and systematize the results is amply evidenced in the Elements of Euclid

A large portion of the history of mathematics up till comparatively lately is occupied with attempts to solve the three problems of the squaring of the circle the duplication of the cube and the trisection of an angle The time spent in these futile attempts has been out of all proportion to the utility of the results but the by products in the form of side developments form the foundations of most of our mathematical knowledge

Applied Mathematics The science of applied mathematics originated mainly with Archimedes but curiously it occupied very little subsequent attention till the time of Galileo nearly 2 000 years later

At the present time the study of mathematics is more necessary than it ever was previously in national education and the national life

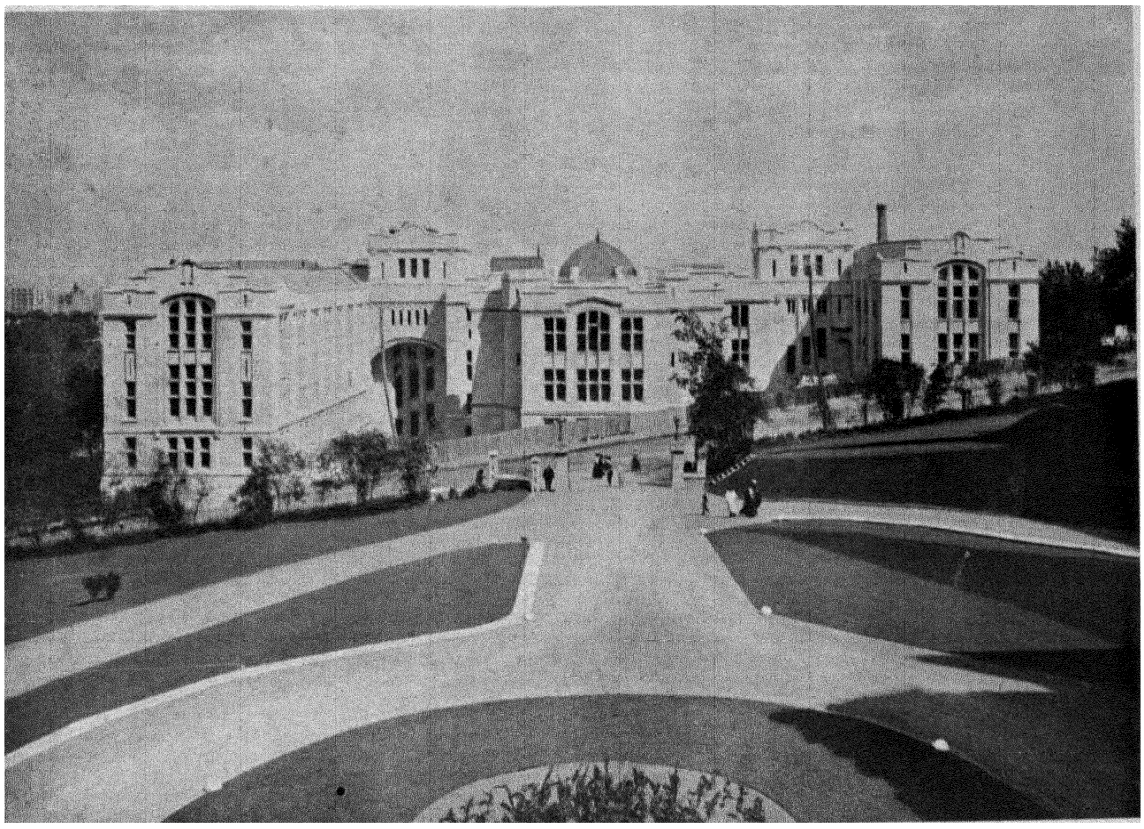
At a time when enthusiasts were designing and projecting flying-machines which could not possibly rise in the air it is extraordinary that no mathematician was induced by wonder motives to investigate whether stability was possible with such a device

If a person with a slight elementary knowledge of applied mathematics purchases any manufactured article such as a camera an umbrella a piano-player a bicycle or a motor-car he will almost invariably notice defects in its construction which would be perfectly easy to remedy It is therefore not to be wondered at that a tendency has arisen among mathematicians to avoid practical problems and to make their researches as abstract as possible The pure mathematician continues to exist because his type of brain is unsuited to any other career but the student who has a taste for applied mathematics finds it better to his interest to turn his attention to engineering physics or chemistry

Modern Developments The last half century has witnessed an enormous enlargement of the domain of mathematical science Algebraists are no longer bound down by the limitation that ab must equal ba geometry has completely broken itself adrift not only from Euclid's parallel axiom but from the three dimensional limits of space philosophy and logic have been reduced to branches of mathematics Not only has the modern Theory of Groups sprung up but a still later innovation is beginning to make itself felt under the name of the Theory of Sets of Points first introduced to English readers by Dr W H Young F R S No living mathematician can be familiar with more than perhaps 5 per cent of the literature of mathematics A student at the university training to be a mathematical teacher will never get anywhere near the limits of mathematical science Mathematics is essentially a science of observation not a collection of rules for getting answers to questions There is abundant material for exercises in elementary mathematics in every household if people will only look around for it It is difficult to make pupils find out for themselves what happens when the conditions of a problem are given but this difficulty largely arises from the defects in our teaching and examining systems

While the uses of mathematics in connection with physics and engineering have been appreciated and provided for in our schools and universities an equally valuable application has been almost entirely ignored namely the application of the theory of probability to statistical science and actuarial work There are few events either in private or national life which are not in some measure the result of chance or accident Every elementary school child who has tossed up a coin or played marbles can learn to represent probabilities by means of fractions as soon as vulgar fractions are taught The further study of probability involving addition and multiplication of fractions would be stimulated by both utilitarian and wonder motives but chiefly by the former and playing games would be an additional stimulus

A great deal of our cut and dried algebra including the Binomial Theorem becomes useful when applied to statistical mathematics A great increase is to be anticipated in both mathematical and



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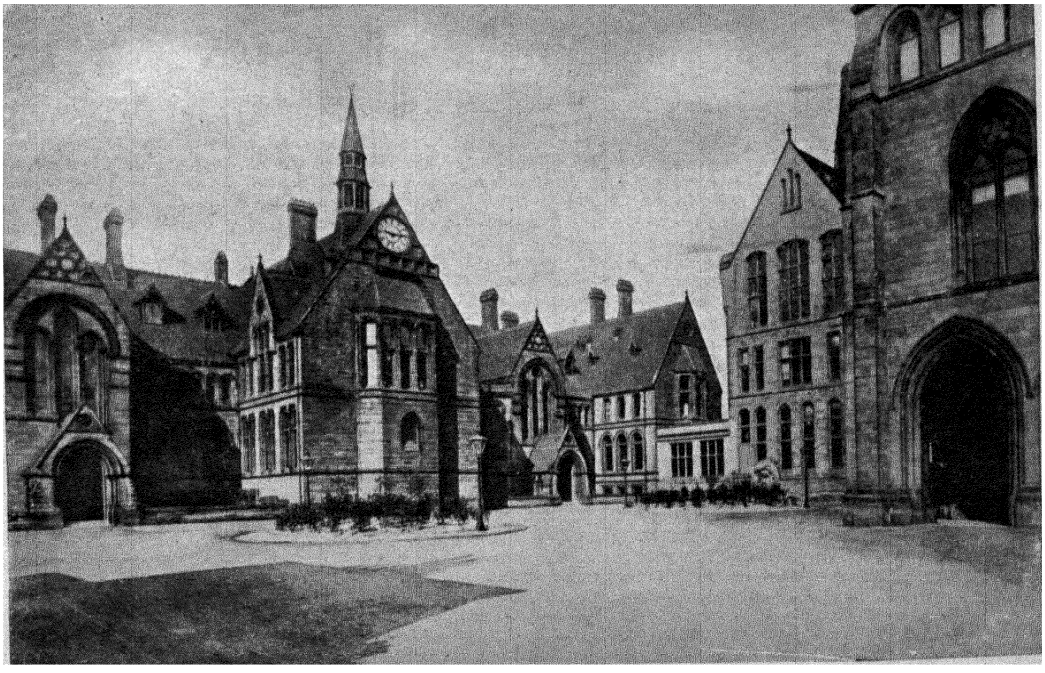

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PLATE LXI

of algebra and of the extension of known trigonometrical tables The results of Indian thought were rapidly assimilated by the Arabs and notably, the arithmetic and algebra were systematized by Alkarismi about 830 His work was the foundation of the earliest European investigations on the subject

The Hindu Arabic algebra and system of numeration were introduced into Italy in the thirteenth century largely through the writings of Leonardo of Pisa and a knowledge of them slowly spread through Western Europe Mathematicians had barely assimilated these ideas when the refugees who escaped from Constantinople after the fall of the Eastern Empire brought with them copies of the original Greek books and the traditions of Greek science

The invention of printing in the fifteenth century facilitated the spread of knowledge and marks the beginning of the modern world It was contemporaneous with an outburst of activity in all branches of learning The mathematical subjects that at first attracted attention were arithmetic and algebra Symbols of abbreviation for the operations of addition subtraction equality etc were introduced—the chief writers of the time being Pacioli Tartaglia Cardan and Bombelli in Italy Stifel in Germany and Vieta and Girard in France

The Seventeenth Century At the beginning of the seventeenth century, logarithms (by which the labour of numerical calculations was reduced) were invented by Napier and developed by Briggs and the use of decimal fractions introduced Their contemporaries Harriot and Oughtred systematized the current knowledge of arithmetic and algebra These investigations are the more interesting to us as showing that Britain had begun to take its part in the extensions of mathematics Hitherto in Europe geometry had been studied only in imperfect translations of Greek works Towards the close of the previous century complete editions of these works appeared and interest in it was further increased by the researches of Kepler and Desargues the method of the former involving infinitesimals and of the latter the use of involution homology polar relations and perspective In short the outlines of modern elementary pure mathematics had been traced and henceforth its principles were expounded in a language and manner essentially similar to those now in use but though much of the modern algebraical and trigonometrical notation had been introduced it was not yet familiar to all readers and it was only gradually that the language of these subjects was definitely fixed About this time statics was placed on a new basis by Stevinus who rested it on the "triangle of forces and dynamics was founded by the researches of Galileo but the principles of mechanics and physics were still only in process of elucidation

The seventeenth century was prolific in great discoveries especially the introduction of analytical geometry and of the infinitesimal calculus both of which immensely increased the power of analysis

Analytical geometry was invented by Descartes in 1637 The possibility of determining a point by co ordinates is fairly obvious but Descartes pointed out that an equation involving two quantities can be satisfied by an infinite number of values each pair of which determines the co-ordinates of a point, that all such points lie on a curve of which the equation expresses some geometrical property, and that, in order to investigate the properties of a curve it is sufficient to select any characteristic geometrical property as a definition and to express it by means of an equation between the co-ordinates of any point on the curve The equation so obtained contains implicitly every property of the curve, and any particular property can be deduced from it by algebra without troubling about the geometry of the figure

Descartes also extended the theory of equations, and improved algebraic notation notably by the introduction of indices One of his contemporaries Cavalieri employed indivisibles in a form which led to a crude way of integration by summation this method was systematized and extended by Wallis About the same time the theory of probabilities was established by Pascal and Fermat The former also wrote on conics and the latter on the theory of numbers

The last half of the seventeenth century was enriched by the discoveries of Newton His investigations on mechanics gravitation and optics have attracted wide attention his researches on pure mathematics are not less remarkable and cover a wide field in geometry algebra and analysis The infinitesimal calculus to which the previous researches of Kepler Cavalieri Wallis and others had naturally led was used by Newton in a fluxional form as early as 1665 but his methods were not published in an accessible form for forty years It was employed by Leibnitz in 1675 in a differential form, and an account of it was printed by him in 1685 and thus made familiar to European writers

The idea of a fluxion or differential coefficient as then treated is simple When two quantities (*e g* the radius of a sphere and its volume) are so related that a change in one causes a change in the other the one is said to be a function of the other The ratio of the rates at which they change is termed the differential coefficient or fluxion of the one with regard to the other and the process by which this ratio is determined is known as differentiation If we know the differential coefficient and one set of corresponding values of the two quantities it is possible by summation to determine the relation between them but often the process is difficult If however we can reverse the process of differentiation we can obtain this result directly This process of reversal is termed integration It was at once seen that the quadrature of curves and the determination of volumes were reducible to integration In mechanics also velocities could be deduced from known accelerations and distances traversed from known velocities In short wherever things change according to known laws here was a possible method of finding the relation between them It is true that when we try to express observed phenomena in the language of the calculus we usually obtain an equation involving the variables and their differential coefficients and possibly the solution may be beyond our powers but even so the method is often fruitful

The Eighteenth and Nineteenth Centuries. The most influential European teachers of the early years of the eighteenth century were James Bernoulli and his brother John They brought into general use the methods of the differential calculus as employed by Leibnitz, and to John we also owe the earliest treatment of functions During the course of this century, the calculus was developed by

many writers until it became a most potent instrument of analysis Gradually the British School, which, under the influence of Newton and his followers—Taylor, MacLaurin, and Simpson—had taken a leading part in its introduction, fell into decay and the continental school became predominant The most prominent mathematicians of the latter half of the eighteenth century were Euler Lagrange Laplace, and Legendre Briefly we may say that Euler extended summed up, and completed the work of his predecessors Lagrange developed the infinitesimal calculus and theoretical mechanics, and reduced them to the forms with which we are familiar Laplace made some additions to the infinitesimal calculus applied that calculus to the theory of universal gravitation and created a calculus of probabilities while Legendre invented spherical harmonic analysis called attention to elliptic integrals and added to thetheory of numbers At the same time or a little later, another group of French mathematicians were extending the range of geometry by methods similar to those used by Desargues and yet another group were extending the applications of mathematics to physics

About 1830 the French School, which had so brilliantly distinguished the close of the previous century entered on a period of temporary inactivity and about the same time the British School which for nearly a century had produced little of mark again brought forth several writers of eminence Somewhat earlier, however a new School had arisen mainly in Germany, whose influence pro foundly affected the mathematics of the nineteenth century It is impossible to describe in non technical language the discoveries of Gauss Dirichlet Jacobi Abel Riemann Steiner Von Staudt and Weier strass but generally we may say that their researches on higher arithmetic or the theory of numbers the theory of equations higher algebra the theory of forms the theory of functions higher trigonometry or elliptic and Abelian functions and higher geometry have created new branches of pure mathematics Among other mathematicians of this time whose writings have affected the development of the subject we may mention Cauchy Hamilton Grassmann Galois Cayley Sylvester Lie and Hermite During the nineteenth century many branches of physics were brought within the scope of mathematics and towards the end of it and in the early years of the twentieth century the underlying assumptions made in mathematical demonstrations were subjected to rigorous scrutiny Never has more interest been shown in mathematics than at the present time and never have there been more students capable of appreciating its developments W W R B

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MATRICULATION.—In a general sense this means admission to membership of any corporate body, academically, the formal admission into a university which thus becomes the student s *alma mater* (nursing mother) The term is also applied to an examination that qualifies for such admission, but membership of a university involves formal registration as well as success at the matriculation or qualifying examination. Most universities accept, in lieu of their own entrance examinations, equivalent certificates of other examining bodies Thus, the matriculation certificate of the University of London entitles the holder, under certain conditions, to become an undergraduate member of the Universities of Manchester, Liverpool Birmingham and a number of others Certain matriculation certificates are also recognized as entrance qualification by important societies such as the Institution of Civil Engineers, Incorporated Law Society, Institute of Chartered Accountants, etc

The standard of knowledge required at a matriculation examination is that which would be expected of a pupil of average ability 16 to 18 years of age who had been receiving instruction at a secondary school or similar institution As a rule there is a wide choice of subjects, the candidate being required to pass in about five In the case of British universities English ' is a compulsory subject The usual fee for matriculation is two to three guineas

MAURICE, FREDERICK DENISON —The difficulty which most people find in estimating rightly the value of any reform is due to the want of imagination which hinders them from putting themselves back into the state of mind of the average citizen at the time when the reform was begun And this difficulty is particularly great in the matter of educational reforms because there is no sudden and sensational event to mark the birth of the reform But those who have heard the early pupils of Queen s College, Harley Street, speak of the ridicule which led them to hesitate even to allude to their membership of the College, can understand the change in feeling and thought, for which that College prepared the way Perhaps a clearer impression still will be conveyed by the fact that Tennyson's *Princess* came out in the year in which Queen's College received its charter In spite of the beautiful passages at the end of that poem describing the future common work of men and women there is an element of ridicule running through the description of the Women's College

As my father was an essentially conservative and, so to speak historical reformer, the College grew out of his previous recognition of a much smaller need—the necessity for training governesses in a manner suitable for their work This recognition, already secured by the Governesses' Institution in Harley Street led my father and others to perceive that every woman was a teacher and that therefore every woman must be trained in the study of the scientific principles from which each separate kind of knowledge must grow This is worked out, in its application to the various subjects taught, in the *Introductory Lecture on the Objects and Methods of Queen s College* My father does not perhaps insist as clearly there as he did afterwards in his addresses at Great Ormond Street on the special idea of *fellowship* and common work conveyed by the name " College ' but *that* idea was never absent from his mind and he felt that association in study was as necessary to young women as to young men For he never separated the thought of the education of life from the education of study, and he welcomed the gradual extension of women's share in public life

The other great educational foundation with

which his name is connected is the Working Men's College (*q v*) This institution grew directly out of the co-operative movement My father and his friends had endeavoured to promote that principle by assisting to found co-operative industries such as associations of tailors bootmakers etc Most of these had proved failures and my father came to the conclusion that professional men had better apply the principle, which they had wished to assert in a different direction from that of teaching workmen the best way of carrying on their own business It was then that he realized that the principle of fellowship involved in a college was the kind of co-operation which professional men could help workmen to understand and that *that* principle ought to replace the superficial teaching of workmen's institutes and counteract the selfish rivalry which was produced by competitive examinations How much he was before many of his time in introducing the methods of the universities to working men is sufficiently shown by the sneering question addressed to one of the founders of the College about a year after the foundation Well! have you yet turned your working men into gentlemen? Oh! answered my father's friend 'we intend to do much more than *that* And the success of that intention is sufficiently proved by the remarkable survival in the College of that spirit of cordial fellowship combined with a desire for accurate knowledge which it was my father's aim to implant there I have specially dwelt on the spirit of the actual educational institutions which he founded He had also a marked educational effect on the theology of his time by giving a new meaning to words like *Religion Inspiration Atonement* and above all *Eternal* C E M

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MAURICE, I D *The Friendship of Books Introductory Lectures at Queen's College*

MAURITIUS, EDUCATION IN —The population of Mauritius numbers about 400 000 of whom over a half are Hindus and about one fourth profess the Catholic religion Elementary education is free but not compulsory In 1913 there were 60 Government schools with 5 700 pupils and 89 aided schools of which about three fourths were Roman Catholic with 7 717 pupils Secondary education is provided in the Royal College with many scholarships and exhibitions and one school with a combined total of nearly 300 pupils Associated with the Royal College are fourteen schools for boys and fourteen schools in connection with the higher education of girls

MAX MULLER, FRIEDRICH (1823-1900) —A famous German philologist born at Dessau and educated there and at Leipzig He studied languages at Leipzig and chose Sanskrit as his favourite pursuit after taking his degree He came to England in 1846 to examine Sanskrit manuscripts at the East India House and at the Bodleian Library In 1850 he became Deputy Professor and in 1854 Professor of Modern Languages at Oxford and in 1866 was made Professor of Comparative Philology His treatises on philological subjects were very numerous and did much to encourage the study of language in England Between 1849 and 1874 he published the Sanskrit *Rig Veda* in six volumes and he also edited the important series of *Sacred Books of the East* He also published his *Lectures* on Sanskrit Literature the *Science of Language* the *Science of Religion* etc delivered at Oxford and Glasgow during his fifty years life in England

MAYNOOTH, ST PATRICK'S COLLEGE — Established by an Act of the Irish Parliament to take the place of the seminaries in France which had been destroyed in the Revolution St Patrick's College the chief institution for the education and training of Roman Catholic priests in Ireland was opened in the year 1795 The site Maynooth is in County Kildare about 15 miles from Dublin The original endowment amounted to £8 000 a year voted annually this was increased in 1813 to £8 928 per annum In 1846 Sir Robert Peel passed a Bill bestowing on the College an immediate grant of £30 000 for building purposes and endowing it with an annual revenue of £26 000 from the Treasury In 1869 the Irish Church Act was passed the Parliamentary grant was withdrawn and out of the Irish Church surplus a capital sum of £372 000 was handed over in compensation The College has received many bequests and is in a flourishing state twenty scholarships founded by Lord Dunboyne Bishop of Cork are tenable by students

The new College built by the architect Pugin surrounds a Gothic quadrangle A disastrous fire destroyed much of the structure in 1878 but this was quickly restored and in 1890 a beautiful chapel was erected at a cost of £50 000 from the designs of J J McCarthy The interior of the chapel is magnificent it is sumptuously furnished with carved oak choir stalls and decorated with mosaics Carrara marble and fine painted windows and it possesses a notable organ

By the Act of 1846 accommodation is provided for 500 students The course of instruction leading to ordination covers eight years of training two are given up to classics two to philosophy and the remaining four are devoted to divinity Scripture Church history canon law Hebrew and Irish

Reference—

HEALY FATHER M R *Maynooth A Centenary History* (1895)

MAYO FAMILY, THE —In July 1819 the Rev Charles Mayo LL D Fellow of St John's College Oxford having heard of Pestalozzi's principles of education obtained leave of his college to travel and joined his establishment at Yverdon in Switzerland as English chaplain He remained at Yverdon for nearly three years mastering the principles of Pestalozzianism and returned to England determined to devote his life to their introduction into this country He at once in August 1822 established a school at Epsom for the purpose of showing their application to the education of the upper classes In 1826 he removed to Cheam where he carried on his school till his death in 1846 Dr Mayo took every opportunity of making known the advantages of the system and among other efforts he delivered a lecture on the 'Life of Pestalozzi' at the Royal Institution in 1826 in which he points out that by the Pestalozzian method in every branch of study the *point de départ* is sought in the actual experience of the child and from that point where he intellectually is he is progressively led to that point where the instructor wishes him to be All the teaching in Cheam School was based on these lines A pupil of Pestalozzi Charles Reiner taught mathematics the rudiments of chemistry physical geography etc In 1835 he published

Lessons on Number and Lessons on Form with prefaces by Dr Mayo Several text books written by Dr Mayo were used in his school

His sister Miss Elizabeth Mayo joined him in 1826 and for eight years helped him in applying Pestalozzi s principles She gave lessons on Objects and lessons on Shells which were afterwards published In her preface to the fourteenth edition of the former (1855) she writes that 'At first the idea of using the material world as a means of education was novel and untried in England but the plain sound sense of the plan soon convinced teachers that in addition to reading writing and arithmetic the objects and actions of everyday life should have a prominent place in elementary education On leaving Cheam in 1834 Miss Mayo was invited to supervise the teaching in the Training College and Schools of the Home and Colonial Society, in order to introduce Pestalozzianism into elementary education

Dr Mayo also took great interest in the development of this institution In 1837 the committee published *Practical Remarks on Infant Education* for the use of Schools and Private Families It contains two lectures by Dr Mayo and practical remarks by Miss Mayo The latter also drew up and published for the use of the Society, in 1838 a *Series of Model Lessons* and others followed Miss Mayo superintended the teaching in the training college and schools by examining the programme of each week s work initiating or criticizing courses of lessons given on Scripture objects geography natural history etc In earlier years she occasionally would take classes to illustrate her methods of teaching M MAYO

Reference—

MAYO CANON C H *Genealogical Account of the Mayo and Filton Families* (2nd ed , 1908)

MEALS FOR SCHOOL CHILDREN —The provision of meals for school children known at first as The Penny Dinner movement had its origin in the National School at Rousdon a small Devonshire parish not far from Axminster Sir Francis Peek who had erected a model school for the parish and took much interest in the children was impressed with the unsatisfactory character of the mid day meal of those children who were unable to return home for dinner The food they brought with them was necessarily cold and often indigestible and it was eaten anyhow and anywhere He determined to try the experiment of providing a warm nourishing meal at school served in a way to inculcate good manners The result proved entirely satisfactory the children liked the meals regular well cooked dinners improved their health and improved health enabled them to make better progress with their lessons The school was a small country school with about fifty scholars the cost worked out at from 1d to 2d per head Could the experiment be adapted to large schools in the poor districts of towns ? This problem the Rev W Moore Ede Rector of Gateshead set himself to solve He provided dinners in a room adjoining St Mary s National School at 1d each A few weeks showed that an adequate meal could be supplied and all expenses, including the cost of cooking met at this rate The Press took the matter up Many imitated the Gateshead experiment in their own localities and endeavoured to improve on it Some introduced halfpenny dinners and one reduced the price to a farthing

The original idea had been that by supplying dinners at a cost not exceeding 1d , the poorer children would be secured one good meal daily, but experience proved that the parents of the children who most needed a good mid-day meal could not afford to supply them with the requisite pennies Other difficulties were the absence of dining rooms the lack of any means of cooking and the question of supervision

In 1883 the entire country suffered from trade depression and the movement for providing school dinners took another form and became in the main a means whereby the children whose parents were out of work enjoyed one good nourishing meal a day In London a Council for Promoting Penny Dinners was formed and their pamphlet of recipes and bills of fare as well as a similar pamphlet published by the Rector of Gateshead, had an enormous circulation In every populous centre dinners were provided for destitute children

The extension of the system was facilitated by a cooking apparatus devised by the Rector of Gateshead who recognized that one difficulty in a day school was the absence of kitchen arrangements It consisted of a cylindrical boiler heated by a gas jet , in this boiler was placed an inner pan containing the food to be cooked When once the gas was lit and the water heated which was generally done in the afternoon no further attention was required till the food was wanted for dinner the following day The food in the inner pan could not burn as the pan was surrounded by hot water and the slow cooking with a temperature which never reached boiling point secured the maximum of nutritious value

The provision of meals for school children had to undergo the usual fire of criticism it was said to be pauperizing and undermining the character of both parents and children

This is the point where so many charitable schemes break down People for whom they were never intended come crowding in to the exclusion of the deserving poor Those who ought to pay come clamouring for that which is to cost nothing, and the crowd of cadgers oust the persons for whom the benefits were designed This difficulty will always exist where public charity is given when persons are allowed to become applicants for it and the recipients cannot be dealt with in detail But in providing dinners for destitute children, it almost entirely disappears if the matter is dealt with through the schools where the children must by law be in attendance

Each teacher has a fair knowledge of the circumstances and home conditions of the forty or sixty children that form his class he can without difficulty point out those who are not properly fed, and knows whether this is occasioned by the genuine and unpreventable poverty of the parents or by waste and intemperance The head master receiving the reports of the teachers can readily ascertain how many children in the school are suffering from starvation and if charitable people supply the necessary funds the deserving children can be put on the free list The facts being known to begin with there is no crowd of applicants clamouring for a share in the charity and requiring an investigation into their cases

In giving an account of the origin of the dinners for school children and showing how owing to industrial depression they developed into a system for providing food for necessitous children, and

how widely and rapidly the system extended in the early eighties little need be said of subsequent developments So manifest were the benefits which resulted that the Board of Education obtained authority for contributions from the rates being devoted to that purpose

An " Act to make provision for Meals for Children attending Public Elementary Schools in England and Wales came into operation on 21st December 1906 It authorized the local education authorities to form school canteen committees or to co-operate with existing committees in providing meals for children and gave them power to recover the cost of meals from parents who are able to pay If there are no public funds the local education authority can levy a rate not exceeding one halfpenny in the £ This Act does much to maintain the health and increase the mental and physical efficiency of the children of the poorest Some would extend the system and make the provision of meals part of the regular school arrangements for all children—make them all day boarders—but this has not yet commended itself to the nation W M E

MEALS, FREE —(See DIET OF PRIMARY SCHOLARS THE)

MEASLES —(See AILMENTS AND INFECTIOUS DISEASES IN SCHOOL LIFE INFECTION AND SCHOOL CHILDREN)

MECHANICAL ENGINEERING, THE TEACHING OF —The education and training of a mechanical engineer may be divided into two parts (1) The study of the scientific principles which have such numerous applications in mechanical engineering—generally called the *theoretical* part (2) the training in the operation of the machines and tools used in mechanical engineering works and the general routine of the manufacture of the machines and appliances constructed by the mechanical engineer—called the *practical* part

The theoretical part cannot be studied from books or lectures only though these are of great importance but work in study or lecture room must be supplemented by instruction and practice in the drawing office and laboratories

Speaking generally the training in the practical part can be properly acquired only in works which are carried on under ordinary commercial conditions It is however quite true that a valuable preparatory training in practical work may be obtained in the well equipped workshops now to be found in most schools and colleges where the theoretical part of mechanical engineering is taught

The education and training of a mechanical engineer, therefore embraces a technical college course and a period of training in commercial works An important question which arises at the outset and has been much debated is in what order should the college course and works training be taken ? The systems in use are (*a*) a complete college course generally extending over three years followed by a training in the works (*b*) The " sandwich system " In this system about half of each of the first three years is spent in the works and the other half at college A sandwich system has been developed in Cincinnati (U S A) where students work in pairs taking the college course and the works training in alternate weeks, so that one student of a pair is at college while the other is in the works This may be called the " thin sandwich system " (*c*) A training in the works precedes the college course

Space will not permit of the full discussion of the relative advantages and disadvantages of these different systems but the following points may be noted Some previous training in the works enables the student at college to appreciate more thoroughly the bearing of his course of study on his career as an engineer On the other hand the shorter hours at college together with the comparatively numerous holidays and the greater freedom of the student as compared with an employee have a disturbing effect on the career of one who has spent several years in the works making in many cases a return to commercial work anything but attractive A great deal may be said in favour of the sandwich system but its existence and success obviously depend on the co-operation of the owners and managers of works

In general it will be found most convenient and on the whole most satisfactory to take the complete college course before entering the works At the same time if the student has the opportunity of doing some practical work during the long vacation this would be a great advantage

Before beginning the college course the student must necessarily have had a good general education and should not be less than 16 years of age His education should have included elementary physics and chemistry and as much mathematics as can be acquired without curtailing other subjects too much

A College Course The college course should if possible, extend over three years The subjects of study and the time devoted to each will vary at different colleges but the following may be taken as a typical course the numbers after the subjects being the approximate number of hours per week devoted to them

FIRST YEAR Mathematics (Pure and Applied) 6 Practical Geometry and Graphics 2 Engineering Drawing and Design 6, Physics and Chemistry with laboratory work 8 Electrical Engineering 4 Mechanical Laboratory (experiments with simple machines) 2, Workshop 2

SECOND YEAR Mathematics (Pure and Applied) 6 Theory of Machines and Machine Design (Lectures and Drawing) 5 Strength and Elasticity of Materials (Lectures and Laboratory) 4 Theory and Design of Structures (Lectures and Drawing) 4 Heat Engines (Lectures and Laboratory) 5 Hydraulics (Lectures and Laboratory) 4 Workshop 2

THIRD YEAR Subjects of second year continued with the addition of special lectures on special subjects connected with the science or practice of mechanical engineering

In the case of students who have had sufficient workshop experience before entering college, attendance in the college workshop would not be necessary, and the time thus saved should be spent in the drawing office or laboratory

There is little doubt that the work done by the student in the college drawing office and in the engineering laboratories is the most important part of the work done at college In engineers drawing offices the original drawings are usually made in pencil only but in the college drawing office the student should not only be taught to make neat dimensioned working drawings in pencil, but he should also have sufficient practice in inking in and colouring He should also make tracings in ink of a number of his pencil drawings and from these tracings he should take blue or other prints, as is done in engineers' drawing offices.

With reference to work done in the college laboratories, it is most important that the student should take full notes of all the experiments and tests he makes, together with sketches and photographs of the apparatus and where necessary, graphs of results should be made on squared paper A good system to adopt is to make the finished notes on single sheets of paper of foolscap size, and afterwards to have these properly bound in volumes according to subjects When this system is adopted, squared paper tracing paper, or any other paper most suitable for the particular records to be made may be used and inserted in its proper place Neatness is conducive to accuracy, and a training in the production of neat laboratory notes and reports is of the greatest value to the mechanical engineer

A few words on the equipment of engineering laboratories may not be out of place here For teaching purposes a number of comparatively small machines are much more useful than a single large machine for the same kind of work For example, several small internal combustion engines by different makers are better than one large one Mechanical engineering plant quickly gets out of date and it is obviously less expensive to replace small machines than large ones

Every mechanical engineer must know something of electrical engineering but it is difficult in draughting a course in mechanical engineering to state the minimum time that should be devoted to electrical engineering In the foregoing outline of a college course in mechanical engineering it will be seen that electrical engineering has been limited to four hours per week during the first year For many posts in mechanical engineering a considerable knowledge of electrical engineering is required and when a student knows that in his subsequent career as a mechanical engineer electrical engineering will play an important part then he may continue the study of that subject during the second and third years of his college course giving less time to say the theory and design of structures and hydraulics

Training in Works Some consideration must now be given to the necessary training in works Under the most favourable circumstances after three years at college three years should be spent in the works somewhat as follows—

FIRST YEAR Moulding and Pattern making (The reasons for the forms given to patterns will be better understood if practice in the moulding shop precedes that in the pattern shop)

SECOND YEAR Machine shop for practice with lathes milling machines planing machines, and other machine tools

THIRD YEAR Say four months in the erecting shop and eight months in the drawing office

A works course such as the foregoing would however in general be possible only for those having considerable influence with the directors of the works, or for those prepared to pay a substantial premium Under ordinary circumstances the candidate for works experience will generally have to be content with a less varied practice embracing the machine and erecting shops and perhaps the drawing office

Of course it is understood that the training which has been outlined is for those intending to take more or less important positions as mechanical engineers It also follows, as in other professions that the mere passing through a course however complete and well arranged, will not ensure lucrative employment Much depends on the natural ability industry, and character of the individual Also in no other profession is it more necessary to be always learning in order to ensure success.

In conclusion, it may be stated that for the ordinary apprentices in engineering works, those who would in the ordinary course become the skilled workmen, there are many opportunities of rising to superior positions by taking advantage of the evening classes held in all centres of industry, and by applying themselves diligently to their daily practical work D A L

MECHANICS' INSTITUTES.—In 1789 the Sunday Society was formed by the teachers in the Sunday schools of Birmingham having for its object the instruction of young men in writing and arithmetic after the Sunday school session was ended The subjects were subsequently added to, and a branch of the society formed a class for mutual improvement in useful knowledge, assisting each other in constructing the apparatus for illustrating the principles of mechanics hydrostatics, electricity pneumatics and astronomy Some of the more intelligent members delivered lectures on mechanics and other branches of natural philosophy, and in 1795 the Artisans' Library was formed The Sunday Society was remodelled in 1796 as the Birmingham Brotherly Society and carried on the same work more thoroughly and extensively Its lectures classes and library entitle it to rank as the first mechanics institution or society in Great Britain Dr John Anderson Professor of Natural Philosophy in the University of Glasgow, by his will left property for the foundation of an institution to be called Anderson's University Richard Garnett was appointed Professor of Chemistry and Natural Philosophy in the institution in 1796 and in the following year conducted a course of evening lectures in Natural Philosophy in the Trades Hall of Glasgow These courses were carried on until he was appointed first Professor of the Royal Institution in 1799 and appear to have been in fact, if not in name, the origin of Mechanics' Institutes

George Birkbeck succeeded him and continued his work in Glasgow and in 1800 formed a special class for the gratuitous instruction of the operatives of Glasgow in mechanical and chemical philosophy ' This class was known as ' the Mechanics Class To supply his needs in apparatus Dr Birkbeck found it necessary to apply to workshops in the city and his intercourse with the workmen and their lack of scientific knowledge, made him resolve to offer them a gratuitous course of elementary philosophic lectures His class rapidly grew from 75 to 500 and was continued for many years In 1823 a secession of working-operatives from the Anderson University led to the formation of an independent association under the title of the Glasgow Mechanics' Institution In the same year the Mechanics and Apprentices' Library was founded in Liverpool In 1821 however the first mechanics' institution had been founded in Edinburgh with the express object of affording instruction to the labouring classes A library was added in 1822 and as the Edinburgh School of Arts this institution was successful from its start The Manchester Mechanics' Institution was founded in 1824 and its building was the first to be provided with accommodation for the various departments of its scientific work It provided systematic class

instruction in chemistry and mechanics and its object was 'to point out and teach the scientific principles upon which the business of the machine-maker, the dyer the carpenter the mason and others depend The history of this institution is intimately associated with all important stages in the development of technical instruction from 1824 to the present day

The London Mechanics Institution was established in December 1823 and on 20th February its President (Dr Birkbeck) delivered the introductory address to a large body of workmen members of the society This institution was favoured with munificent patronage and the names of Brougham Denham Hobhouse, and Lushington as well as those of royal princes are connected with its early history In its first years the average number of students yearly exceeded a thousand who paid then a yearly subscription of 24s It was managed by a committee elected by the members and two thirds of each committee were working men From 1824 the Mechanics Institute Movement spread rapidly through the country

Hudson's *History of Adult Education* (1851) gives a valuable account of the various foundations and their work in all parts of the British dominions with a list of over 700 in the British Isles and remarks that they "appear to be extending to the remote regions of the earth and even in the Sandwich Islands where one had recently been established at Honolulu

The modern London Polytechnics (*q v*) are a development of the Mechanics Institute movement

MECHANICS' ROOM, THE —(See LABORATORIES THE EQUIPMENT AND ARRANGEMENT OF)

MECHANICS, THE TEACHING OF —Whether we regard the claim of a subject to be included in the general school curriculum as based on utility to know or capability to train it would seem that that of Mechanics is well founded on either principle Every one throughout life is in constant relation to the effects of force motion and energy and has constantly to exert his conscious will through his muscular system in connection with them The subject is fundamental to all physical science and no teaching of any branch of physics can be begun until a foundation more or less broad has been laid in its general principles On the other hand it can be commenced quite early in the school curriculum with the combination of easy reasoning and experimental work so valuable for good mental training It is a subject too which if taught in this way—so that the pupils feel that it deals with real things—cannot fail to draw their interest Nevertheless it must be admitted that its study has been neglected in the great majority of schools In a long experience in the teaching of university students the writer has found that about 20 per cent of students attending the first year's courses in physics have had no previous acquaintance with mechanics It is not easy to see why this should be so Partly no doubt, many head masters do not realize the fundamental importance of the subject—an importance as great as that of the elements of algebra and geometry The subject also is not made compulsory in leaving or matriculation examinations Some further pressure on schools to include it is greatly desirable The time to be devoted to learning the principles and their simple applications need only be a small proportion of school time

Dynamics. Not so many years ago the discussion of the proper way of teaching dynamics never failed to create heat Each disputant sorrowfully knew the other to be wrong Yet in truth there is no best way of teaching any subject Not only is the method and order to be adopted dependent on the age at which it is begun and on the particular cast of mind of the student but it depends almost as much on the cast of mind of the teacher himself Whatever general arrangement may be adopted it should follow certain general principles The development should proceed in logical order each part naturally growing out of what has preceded The pupil should be brought to realize that he is dealing with real things and not forms of words Theory and experimenting or graphical work should go in close connection In mechanics especially the pupil's *à priori* ideas of force caused by familiar muscular effort and its subjective effect on the will must be put aside Much of the difficulty which many beginners undoubtedly have can be traced to this mixing up of their subjective feelings with the exact material phenomena For this reason it is suggested that except possibly for quite young boys it is preferable to begin with the simplest kind of motion along a line Problems on uniform motion and relative motion can be solved easily on first principles by arithmetic measure of velocity can be changed from one set of units to another *without any previous instruction* from the teacher The ideas of uniform acceleration and the usual formulae can then be educed by the teacher and numerical examples again worked (For this purpose they can be informed as a fact that a stone falls with a uniform acceleration of 32 ft /sec^2 although the consideration of gravitation comes later) When these have become familiar the new concept of mass can be taken up and its relation to motion A natural definition of equal masses is that if two such collide with equal velocities in opposite directions and stick the two together come to rest The student can experiment to see whether if two masses are found equal when one velocity of collision is used they will also be found equal with any other With a criterion for equal masses multiples of a standard easily follow The great advantage of this approach to quantity of motion is that it deals with one simple single idea The equality of masses measured by the equilibrium of the attraction of the earth as shown by a balance lever is when analysed seen to be a complex of several different ideas involving either knowledge obtained later or to be taken as axiomatic This latter method also accentuates the habit of confusing mass and weight which the pupil's everyday usage of words has led him into and which requires special effort to break On the other hand the method here advocated leads the pupil to the essential quality of matter as the possession of inertia That of gravity is a secondary property

Apparatus for testing the conservation of momentum can easily be set up without complicated or costly instruments The pupils should investigate how the motions of colliding bodies are related before and after collision and this not for inelastic bodies alone They thus come to grasp as a result of their own experiments the great fundamental dynamical principle of constancy of momentum The idea of the change of momentum of a body as caused by a blow or impulse easily follows It is a natural step from this to the idea of impulse per second causing a continuous rate of

change of momentum Force is simply another name for the cause of this rate of change of momentum We are now in a position to treat of the entirely new phenomenon of gravitation and, to find the magnitude of the weight of a body the acceleration it produces must be measured Atwood s machine here becomes invaluable, not so much for measuring g as for testing deductions

The pupil is now in a position to deal with the ideas of work kinetic energy and power He should not be hurried and should become thoroughly familiar with these new ideas—ideas on which the whole of dynamics is subsequently developed He can then pass on to two-dimensional motion and from the parallelograms of velocity and acceleration—which are evident when their meaning is understood—the parallelogram of forces follows The pupil can now go on to the study of statics—including simple hydrostatical problems—and the future order of development of the subject is immaterial so long as the sequence of argument is not inverted

Statics. Forty years or more ago it was the universal custom to take statics before dynamics to assume force as a known entity to produce elaborate proofs (*e g* Duchayla s) of the truth of the parallelogram of forces and to begin dynamics with a statement of Newton s laws as the starting point It was rare to find precision of ideas and the technical magazines of the time were full of mechanical paradoxes There has been a great change in recent years but even still especially in institutions devoted to training engineering students the start is made with weight as the fundamental quality of matter and mass as one—g^{th} of the weight Students trained on this basis can of course deal with structural problems quite clearly but when purely kinetic problems are involved precision of view is frequently wanting On the other hand one trained on the inertia idea of matter and the kinetic basis of force has nothing to unlearn—or rather re learn—when dealing with structural questions He would never think of using anything but weight units The point can well be illustrated by a case from experience In a recent examination the students were asked to find how many C G S statical units of electricity there were in one F P S unit They all from their knowledge of what these expressions meant obtained the result 30 48 × $\sqrt{}$ (poundal/dyne) A considerable proportion then proceeded as follows One poundal = 1 lb /32 one dyne = 1 gram/981 and so obtained the result When asked what the earth had to do with the question the point was not seen Asked if they lived in Jupiter would the poundal still be 1/32 of the pound some thought 'yes,' others that the acceleration in Jupiter should be used It was clear how these students had been taught dynamics

The Work of an Advanced Student The syllabus of a course of training as outlined above is suitable in its details for boys beginning the subject early who will probably leave school before 16 The order of development still remains best whenever mechanics is begun and however far the boy intends to go as a scientific or technical specialist In present practice the schoolboy generally goes no further than the statics of coplanar forces and centre of gravity with practical work in weighing and determination of densities There is however much to be said in favour of extending the experience of a boy who stays at school at least until the age of 16 to simple problems of the two-dimensional motion of rigid bodies symmetrical about the plane of motion The mathematics involved is of the most elementary whilst the new notion of moment of inertia is fundamental to any physical or engineering study taken up by the boy immediately on leaving school It has been argued that this part of the subject should be postponed until the student has some knowledge of the differential and integral calculus On the contrary it may be asserted with reason that it is an advantage to begin without that knowledge The calculus takes the attention from the dynamics and fixes it on the mathematics The problem becomes an exercise in the integral calculus The study of the motion of a rigid body opens up a wide field for exercising the student's mind on applying dynamical principles He has to deal with real problems of interest in place of the very often more or less artificial ones of motions of particles in a line no additional mathematical knowledge is required and the new ideas of angular momentum, energy of rotation and the properties of moments of inertia follow straight from the fundamental idea of momentum and force The values of the moments of inertia of the solids usually met with can be obtained with better advantage without using the integral calculus simply directly through their general properties illustrating these properties thereby For instance the relation between the moment of inertia about a line and that about a parallel axis through the centre of gravity will give the moment of a bar or rectangular lamina by considering the latter as composed of two equal ones of half the length The same property will give that of a triangle So the moment of inertia of a sphere can be directly deduced from the fact that the moments of two similar bodies are in the proportion of the fifth powers of their linear dimensions It is not a question of getting round the integral calculus by an artifice such as the use of a series Σm^{-n} It is better in a case like that to learn the calculus first Cases where integration is required are rarely of practical importance

Importance of Mechanics as an Educational Instrument The whole of this article is a plea for the earlier study of mechanics in schools and for its inclusion as a general subject for all, in the same way as are arithmetic and geometry Its practical importance is clear but the argument is based on its peculiar adaptability to training the pupils' power of thinking since while the first principles are clear and few their application requires only simple direct reasoning with a sense for concrete things and little special knowledge of algebra or geometry at the same time the field of problems dealt with is extremely wide and interesting

W M H

MEDIAEVAL EDUCATION —The significance of mediaeval education to the modern student of education is manifold in respect to organization and administration pedagogy and curricula It is the expression of the absolute continuity of Roman Imperial and British Imperial education It is the record of the educational work of the Church It is the process that made Humanism possible It is one of the mainsprings of national life In a brief paper it is not possible to develop all these themes, but the main lines of thought can be indicated for others to develop First a word as to Roman Imperial education We see more than two centuries before our era the Roman system at work under *literatores* or writing-masters but it was

Greek influence that gave us the Roman process of literary education The introduction of the *Grammatici* gave the literary note for they taught to Latin children Greek or even Latin in literary fashion The general name for a school was *Ludus* (this and the origin of the word school from σχολή leisure suggests from the very beginning the cultural side of education the play of mind the leisure of learning) the name for a schoolmaster was *paedagogus* The *grammaticus* taught grammar literature and the writing of verses the *rhetor* taught declamation The instruction in the grammar school given by lectures and ruthlessly enforced by the rod led directly to the university work The school and the university between them carried out the famous double course known as the *Trivium* and *Quadrivium* throughout the Middle Ages and systematized before our era by M Terentius Varro A mediaeval couplet summarizes the courses—

Gram loquitur *Dia* vera docet *Rhet* verba colorat
Mus canit *Ar* numerat, *Geo* ponderat, *As* colit astra

Below the grammar school was the elementary school where work began at 7 years and the teaching was monitorial Girls went to school in Rome but it is not clear that the two sexes went to the same schools even as little children This system received State sanction under the Empire special privileges and endowments were given to public teachers and in A D 425 unauthorized persons were forbidden to open schools

Romano-British Schools This educational system was brought to Britain by the Romans and survived almost intact (with of course various feudal additions) to the Reformation There is hardly a specific feature of Roman education that was not reproduced in the Middle Ages in England even the system of the payment of teachers by *honoraria* and in kind survived—a system which was carried to America and influenced various developments there from the seventeenth century onwards It will be useful to note certain significant stages in the history of mediaeval education We know from Tacitus Juvenal and Martial that the Roman educational system took root in Britain that Gratian's educational decree of A D 376 applied to Britain and gave fixed salaries to the municipal grammarians and rhetoricians we know that after the Roman departure towards the end of the fifth century the Roman system of education was still in active use We have a Welsh or rather Romano British canon of the sixth century dealing with the punishment of boys which sanctions the Roman practice The *Anglo Saxon Glossary* of the eighth century shows us that the Roman terms of educational art were in use during the darkest period and we can see in other documents the direct continuity of the Romano British schools Thus when in the year 630 Sigbert King of the East Angles *instituit scholam in qua pueri literis erudientur* Bede adds *Juvante se episcopo Felice quem de Cantua acceperat eisque paedagogos ac magistros juxta morem Cantuariorum praebente* The last phrase refers to an educational system in Kent, which preceded the coming of Augustine in 595 These Kentish teachers of the old Roman days were assisted by Felix the Gallic bishop and Furga an Irish monk, so that we see three Roman educational systems combining in Saxon England It is important also to notice that in Wales and on the Welsh border the Romano-British system developed monastic schools for adults of a university type in Llandaff, Bangor and possibly on the Wye It is not impossible that it was wandering scholars from schools of this type who eventually carried to Oxford and Cambridge the tradition that created as early as the fourteenth century, a belief that these twelfth century universities were of early British origin But the chief point to bear in mind here is that when English education began to become effective—first under Alcuin and again after the Danish Wars—it was the Roman Imperial system adapted by the Church to the growing needs of the people The Gallic or French influence reinforced the Roman tradition, as early as the days of Juvenal we hear of it The Church at Canterbury welcomed it Under Charlemagne and his successors a parochial educational system had taken root and the canons of Ælfric (A D 994) and earlier canons show us the system at work in England *Presbyteri per villas et vicos scholas habeant* The teachers (says Ælfric) are to demand nothing from the children in the way of reward "nor accept anything from them except what parents freely give to them out of a charitable desire" We thus have at the beginning of the eleventh century something in the nature of a network of parochial elementary schools where the teachers received as in Roman times customary payment *honoraria* These schools were for girls as well as boys, and we get some instances of elementary schools for girls only The second and third grades of education began to develop very rapidly about the same date By Canon XXXIV of the *Concilium Romanum* of 826 it was directed "In all bishoprics let all care and diligence be exercised in the appointment of such masters and teachers as may have at heart and assiduously teach the study of letters and of the liberal arts The development of such teaching became possible in England in the late tenth and early eleventh centuries Ælfric the Grammarian Abbot of Evesham produced in the late tenth century says Dr Sandys in his *History of Classical Literature* "a *Latin Grammar* with extracts translated from Priscian followed by a *Glossary* of some 3 000 words in Latin and English arranged (more or less) in order of subjects This *Glossary* is the oldest Latin English dictionary in existence The third of these educational works was the *Colloquium* in which Latin being still a living language is taught in a conversational manner the Latin words of the dialogue are explained by an interlinear translation the pupil is made to answer questions as to his own occupations and those of his companions, and the use of the rod is not forgotten Early in the next century Abbo of Fleury organizes the adult educational work of the Abbey of Ramsey and creates what is practically a university Dr Sandys tells us that Abbo (who was the author of the earliest English work on Mediaeval Arithmetic) wrote for his pupils at Ramsey a scholarly work known as the *Questiones Grammaticales* He here deals with their difficulties in matters of prosody and pronunciation showing in his treatment of the same an accurate knowledge of Virgil and Horace, and even an interest in textual criticism" By the year 1016 we find that London was also a centre of culture for in that year the Bishop who was also Abbot of Evesham *libros etiam plurimos, tam divinos quam grammaticos, de Londonia transmisit* so says the *Chronicon Abbatiae Evesham* We thus see that, half a century before the Norman

Conquest, there was in existence a threefold system of education awaiting the life and power of growth that accompanies settled government

Effects of the Norman Invasion, and Later Developments. The parochial school system fed the grammar schools maintained by the collegiate churches of secular canons in most parts of the country, while higher education of a university type was supplied in centres such as Evesham, Ramsey, Winchester, and London The accession of Edward the Confessor in 1042 brought the culture of France Lorraine, and Normandy into England and placed scholars of European reputation in English sees From 1052 onwards Laon the centre of ecclesiastical thought and England were in close communion and the invasion of the Normans (*c* 1066) was followed by an increasing volume of continental educational and cultural influence In 1070 William I confirmed in council the laws of Edward the Confessor protecting the scholar while Lanfranc took steps (1072) to raise the standard of learning in the monastic houses Moreover we find in these critical years the definite organization of episcopal education by which all education in each diocese is controlled by an official called *Magister scholarum* By the end of the century the episcopal monopoly of education is secure The collegiate houses (in which the secular canons were replaced by Augustinian regular canons in the first half of the twelfth century) secured by grant from the bishop in non cathedral cities, the local control of education and appointed their own *Magister scholarum* Canons of prebends in a cathedral city or a priory had control over the schools in their prebends and we get some cases of private patronage of schools but we may say that throughout the Middle Ages we have episcopal control of secular education—a control in some cases delegated for convenience to other great or suitable ecclesiastical corporations Under this carefully organized system which secured licensed teachers for all schools grammar schools multiplied in all directions throughout the twelfth and thirteenth centuries The Normans and Lotharingians brought with them not only scholars and the machinery of control and organization, but also a passion for education itself Even the dry record of Domesday shows us this in the various provisions that it discloses for the education of women of high rank while we know from contemporary documents that the children of the invaders were trained in scholarship At the opening of the twelfth century humanism was awake in Europe and in England Norman scholarship developed more rapidly than in Normandy or Sicily and reacted on Europe and the East Thus the famous scholar Abelard of Bath was a teacher at Laon before 1100 then travelled in the East, and returned burdened with the scholarship of Byzantium and the mathematics of Arabia It was under these circumstances of peculiar hopefulness that the University of Oxford in the days of Henry Beauclerc came mysteriously into being Between 1117 and 1121 we find Thibaut d Estampes a teacher of Caen at Oxford presiding over a century of scholars, and calling himself "*Magister Oxinfordiae*" That is almost 800 years ago Oxford suddenly took rank as a centre of learning, and by 1149 the great Vacarius of Bologna was lecturing there on the Civil Law The mediaeval system of education in England was complete Her little parochial schools (which the children attended from the age of four years) her busy grammar schools had become a national educational system with the evolution of the University Cambridge soon supplemented Oxford, and the foundation of Merton College at Oxford, (1274) and Peterhouse at Cambridge (1286), marked the latest mediaeval development of a university system which, as early as the year 1216, was overflowing with scholars drawn from England and all parts of Europe

Relation of the English System to that on the Continent. Mediaeval education, in England and on the Continent alike, was ultimately related to the social structure All that has been said above as to the parochial and episcopal organization of education belongs to the history of education on the Continent as well as in England Church control of education implied a single policy ultimately directed from Rome by educational decrees such as those issued by Pope Eugenius II in 826, by Alexander III in 1170, by the Third Council of Lateran in 1179 by the Fourth Council of Lateran in 1215 and by the Council of Vienna in 1311 It is therefore not necessary here to trace the special course of mediaeval education in various countries though there are in any fully detailed account specific national features to remark For instance though there were popular text books for schools common to the Continent and England such as the *Doctrinale Puerorum*, yet each country had also its own special books Again one country would devote itself to one line of thought in the university work differing from that of other countries and universities and the line was dictated by the genius of some particular scholar such as Abelard at Paris Vacarius at Bologna Bacon at Oxford and so forth and the fact would no doubt react especially in the matter of text-books on the schools But local educational variants did not affect the main principles of papal and episcopal control even where the king or legislature as in England directly intervened in educational matters Education was, therefore an international bond, and the exchange of teachers between the universities strengthened this bond There was a Republic of Letters in Europe in the thirteenth century Education was democratic It was the single gateway that led through the castellated walls of feudal privilege But it had for long ages one wide —but in view of the history of serfdom not inexplicable—limitation The child of the serf had no right to education In the Middle Ages it was only the child of the freeman that possessed this right The limitation was an inheritance from Rome that feudalism gladly adopted But the Church resented the limitation as it restricted her range of choice for the priesthood and it was laid down that, if a serf was ordained he became free The loss was provided against by manorial customs that were very usual in England and elsewhere that a serf's son could not go to school without the consent of the lord and the payment of a fine Such a rule was a compromise, but it was a compromise that could not last in view of the enormous spread of education in the first half of the fourteenth century, and the terrible economic unrest and dislocation that followed the Black Death in the second half of this century Education had become necessary to society at large, and that society could not afford to lose the efficiency of its manhood already decimated by the plague Consequently, in England in 1406 we find the Statute of Artificers declaring that "every man or woman, of what state or condition that he be, shall be free to set

their son or daughter to take learning at any school that pleaseth them within the realm" Henceforward, the way of learning was open and in the year 1410 the Courts, in the Gloucester Grammar School case laid down the common law right of any well qualified person to teach youth But by this date the mediaeval system of education had passed its prime It had played a great part in the advance of culture and was giving way to a new and largely non clerical order, though the Church was still determined to play an immense part in national education both here and on the Continent A wider scope of learning came with the Renaissance and the Reformation scholarship rose to new heights and new exactitude and the Greek world of thought was at last thrown open to new and hungry generations But the mediaeval system produced thinkers of enormous power such as Thomas Aquinas and Roger Bacon evolved a system of philosophy that is not yet exhausted and preserved the structure of society in a fashion peculiarly useful to that age Supplemented as it was by the chivalric system of education for the rich which deliberately made culture and humanism and literature the companions of Arms it repressed materialism and deepened the moral sanction that held social life together Mediaeval education moreover secured continuity between ancient and modern civilization and made possible a revival of learning that drew into itself the promise and glamour of the Middle Ages and handed them on to our own days (See also articles on MONASTERIES EXTERN AND CLAUSTRAL SCHOOLS IN, MONASTERIES AND LEARNING BOOKS SCHOOL DICTIONARIES ETC) J E G DE M

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MEDICAL COUNCIL, THE GENERAL —Previous to the passing of the Medical Act of 1858 degrees in medicine and licences to practise were granted by five bodies without any State supervision The bodies were the Universities of Oxford and Cambridge the Royal College of Physicians the Royal College of Surgeons and the Apothecaries Hall Each of these bodies laid down its own regulations for study and held its own examinations The Act of 1858 established a General Medical Council of Medical Education and Registration' consisting of twenty three members of whom six were appointed by the Crown and the remainder by the licensing bodies The number of members of the Council was increased in 1886 to twenty nine and since then three of the members have been appointed by the medical profession

The principal object of the existence of the Council is to enable persons requiring medical aid to distinguish between qualified and unqualified practitioners and to carry out this object a *Medical Register* was established No names are entered in the Medical Register except of persons who hold diplomas or licences granted by one or more of the licensing bodies after examination

The Amending Act of 1886 gave a precise definition of a "qualifying" examination as one in which medicine, surgery, and midwifery are included and which is conducted by a university or a medical corporation or a combined examining body, which must be capable of granting a diploma in medicine and one in surgery

The Council obtained under the Medical Act the authority to require from the licensing bodies information on the courses of study they prescribe and the examinations they hold as well as to visit and inspect the examinations either personally or by deputy If the Medical Council discovers any cause for dissatisfaction it may report to the Privy Council and the Privy Council has power to deprive the licensing body of its right to grant registrable qualifications

The licensing bodies and the General Medical Council have worked harmoniously and have brought about a great improvement in medical education Although the standard is not quite uniform throughout all the examinations the Council has been able to ensure a minimum which satisfies its own demands

Minimum Requirements At an early period of its existence the Council established a system of examination in general knowledge which candidates should possess before taking up any medical study Fixing an age limit of 16 years as the earliest at which a student's name could be placed on the Register the Council demanded a certificate to show that he had passed an examination including English Language Grammar and Composition Latin Mathematics and an additional language The standard imposed is equal to that of the ordinary University Matriculation and the certificates of any British university are accepted In the professional examinations the Council requires a five years course of study which must include Physics Chemistry Biology Anatomy Physiology Materia Medica and Pharmacy Pathology Therapeutics Medicine Surgery Midwifery Vaccination (theory and practice) Forensic Medicine Hygiene and Mental Diseases The student must spend four years in a school of medicine including three months indoor practice in a lying in hospital The fifth year should be devoted to clinical work in a hospital or dispensary recognized by the licensing authority or six months of this year may be spent as pupil to a medical practitioner In addition to the above requirements the Council also makes suggestions and recommendations with regard to the practical and clinical teaching of students

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MEDICAL EDUCATION —When by a logical convenience we separate general from technical education we are in danger of forgetting the unity in which these aspects of mental and manual growth are bound together There is no practice perhaps not even the most mechanical in which the human mind is limited absolutely and immediately to the material in which it happens to be working none into which the mind does not carry some larger and more various conditions In the hands of man work is no longer the narrow diligence of the insect in the hands of man work becomes a craft pliable and continually open to manifold influences of thought and sense impression The mind and hand inform each other as enrichment of the mind trains the hand so by every new touch of the hand the mind is increased A technical education then cannot be built up by itself Education in medicine is no moulding of a virgin clay into a primary shape, nor again is it the mere addition of a top storey to

an incomplete building it is a particular bent and finish given to mind and hand already, for good or ill, fashioned very largely by tradition and by the co-operation of other faculties into a more or less universal instrument

If this be true if the student must enter on the threshold of medicine as already a developed and animated being if this more than rudimentary build and character of him must enter into and inform every act of his future life it is surely of the utmost importance that before the special training be commenced his general education shall have been of the best or at any rate good And of all callings this need is most evident for medicine In no craft are openness and quickness of mind and imagination wisdom in difficult and intricate affairs humanity and rectitude more precious than in our own Yet these essential qualities are bred not of the technical but of 'secondary' education

Happily it is not my part to discuss at any length the merits and faults of secondary education in England this portion of the student's life is dealt with in other chapters of this work but some reflections arising out of the blend of general and special education cannot be omitted the one grows into and through the other Indeed in the efficient craftsman of whatever calling to the end of his day of activity the universal and the particular are continually modifying each other and growing or starving together The mind of the technical student if he is to work with his fellow men must be a partaker in the general heritage and yet being but human and so limited in scope time and capacity must be bent to a special training and adapted to a particular set of external things and ends If however we are to be individuals not mere cells of a social organism our teachers must be careful by some larger influences to counteract too narrow a discipline they must endeavour moreover to compass this not by liberal diversions only but also by interpreting each particular and technical detail in the light of the larger truths

Now the medical student will come under four disciplines those of the secondary school of the university of the technical school and of the world Seeing then that as the medical student enters upon the proper study of his art those influences or ingredients which pertain to a liberal education do formally at any rate come to an end all or at any rate most of the liberal education must be compassed in the secondary school It is true that afterwards a liberal air should be given to all parts of the technical instruction especially in the universities it is true also that by the companionship of students of various avocations especially in a residential university more of this breadth of outlook will be gained and something farther perhaps may be hoped for in the student from a pious heroic climbing of his own yet something more than the framework of this kind of education must be built in the secondary school

A good medical must therefore imply a good preliminary education But it is the general moan that if the secondary school be admirable in the respect of formation of character yet in that of instruction it is curiously poor not in its scientific courses only which can be made good afterwards but in all departments of knowledge Within limits, it does not so much matter what a boy is taught as how he is taught it Be the content what it may, he should betray some possession at least of the subjects of ten or twelve years of study Let him be taught Latin, some modern language, nay, even Greek if it be so agreed, but, if so, let us see to it that the youth, after ten years of schooling, shall not on entering upon scientific courses at a university or medical school, betray hour by hour his ignorance of the simplest Latin or Greek words and phrases and his utter inability to look up a reference in any foreign magazine Let us see to it not only that his English composition shall be void of gross grammatical errors and verbal ineptitudes, but that it shall not at its best be vulgar How on earth a youth from the secondary school manages to elude even the rudiments of knowledge and every tincture of the various literary libations which during the best years of his youth have been poured over him is a standing puzzle He comes up to Cambridge—I speak of course of the majority of his kind—with many fine qualities but almost without acquirements I am not pressing for much or early science teaching in the grammar schools, science deals mainly with material ends and youth is generous What boys want to learn what they are curious about when they can get out of the strait jacket of a routine mechanical teaching is what man is and what he is doing what man has done and what man as a picturesque adventurous and ethical rather than as a mechanical being can do Notwithstanding as in his everyday conversation with people and books he picks up much of the home humanities it is well at school to introduce him to the less homely achievements of great men of other peoples and times let these examples be found where they may The 'Compulsory Greek" of the Admission examinations of certain universities is a parody of education and a thief of precious time but some languages must be taught and taught far better than at present There are strong reasons for making Latin one of them, not "dead Latin for deaf and dumb scholars, but living Latin a tongue in which the students in their several standards shall speak think, and write And as if new notions are to be proclaimed and followed some of us must be audacious I am radical enough to claim for English that it shall be one of the school languages That even a genuine "classical education is no warrant of good English is a matter of common observation Sooner or later every human attainment must come to literature therefore without various, flexible, and forcible language to express himself withal, the illiterate man is not equipped, he lacks his proper instrument Again as it is in childhood and youth that the main linguistic lines and centres are built up in the brain one at least of these school languages must if only for utility's sake be modern and foreign

Not less needful for the student of medicine is mathematics All boys can use their tongues but they vary widely in capacity for mathematics Still some even if only rudimentary mathematics is almost an indispensable training for the student in all faculties and especially to the physicist, chemist and physiologist

In respect of school science between *aet* 14–17 the boy should be taught the broad outlines of the world system wherein he dwells the orbit shape and growth of the earth the kinds of matter of which earth as well as planets and stars consist, its land and seas its place in the solar system, its meteorology, and so forth From the age of 17, the

special sciences especially physics chemistry and the more concrete "Natural History' should be taught to all boys At Cambridge every student in every faculty unless an Honours candidate must under the title of 'The Preliminary Scientific" pass the 'First M B Examination' (*i e* the Elements of Physics Chemistry and Biology) It is indifferent whether the student take this examination under the one title or the other and he is supposed to sit for it on admission If he does not his special education is delayed As this quantum of science is indispensable in the training of every educated man we have called upon the secondary schools to prepare all their Cambridge boys for it and they have risen well to the occasion Every university on its medical side and every hospital school should require these elements of science among other subjects to be passed on or before admission Thence from first residence the medical students are led forwards to advanced classes in chemistry and biochemistry and are moreover in a position at once to commence if they please—and most of them do please—the courses of anatomy and physiology But a few whose time is their own pause here in the course of medicine to occupy themselves for a while with a more liberal course in mathematics perhaps or in natural science or even in history or letters But such advantages are only within the reach of those who may obtain studentships or Fellowships or whose private means give them more freedom If ultimately these men enter upon the profession of Medicine they become the "flowers' of our flock For the general run of students some haste towards the professional goal has to be made from the beginning

The large majority of our students however take the Natural Science Tripos in which the sciences ancillary to medicine are considered from a wider and more disinterested point of view and by morphology embryology biochemistry and the like lead the medical student to see and to interpret his studies on larger lines

The ancillary sciences are now in all medical schools of importance taught by whole time professors pure scientists but in anatomy physiology biochemistry pharmacology and pathology it is most desirable that at any rate these professors and chief demonstrators should themselves have passed through the whole medical curriculum and be in fact Doctors of Medicine This qualification prevents centrifugal specializing gives a purpose to the common work keeps it together and illuminates the main purpose of the curriculum Even in the Honours teaching the professor and his classes gain by the apprehension of the many problems which arise only out of practical experience in the clinical field In England pre clinical science has not been doctrinaire it has had continually a strong practical bent while for more adventurous students adits remain open in all directions If we have not turned out the most scientific physicians at any rate we have produced the best medical practitioners in Europe

The Longer and the Shorter Curriculum In Germany every medical student proceeds to a university the consequence is that young men of moderate ability are overweighted and overdrilled while those of greater ability do no doubt, develop into efficient some into masterly practitioners The smaller men if their heads are hard enough and their memories tough enough enter upon practice with much arid learning but defective in the minor arts of practice and in *savoir faire* Too often then either the university is dragged down or many of its students are overdriven Many of them perhaps the majority should have been content with a less arduous training and learnt in a subordinate if still most useful sphere of practice to be ready in resource apt to seek advice in difficulty, more human and if in the larger issues unprogressive in ordinary circumstances to be kindly and adroit Many young men desire no more than this honourable ambition At the end of his five years it is true the German student must keep a year of practice under supervision an excellent rule and one which though in this country not compulsory is generally followed by means of resident hospital appointments or assistantships Such a prentice year might well be required of all our students not for a diploma or university degree but after them as a condition of admission to the Register

Why should we not recognize what in the world we see already namely two orders of practitioners one a class of kindly handy men well up to the ordinary standard of the day stationary no doubt in respect of the medicine of the future but apt to pick up those practical hints and dexterities which in family practice are invaluable the other of men who have gone through the longer course of a university who have been educated on larger scientific lines and who have been engaged in research at least so far as to know the confines of knowledge and ignorance and what they mean The former practitioner does not ask to be a scientist he is content with what science he requires for a diploma and afterwards may enlighten his current methods and work

The course and the examinations for the Conjoint Diploma of the Colleges should meet the needs of these candidates and their diploma would serve well for a "one portal system' Already it is sought by almost all the students of the southern schools and universities and arrangements could easily be made to bring the examination nearer to and into connection with the northern schools so as to be the one gate to the Register Thus the universities now hampered by the proper requirements of the State (by way of the General Medical Council) in respect of the narrower technical equipments would be freed to expand their more liberal courses of study and to bestow their degrees on candidates conversant with larger and more disinterested conceptions and having a stronger grasp of scientific methods As it is M B and M D degrees are too often conferred not as marks of academic training but as little more than qualifications to practice and therefore rank far below the parallel degrees in other faculties The Royal Colleges and some of the universities are in favour of this reform (see *Roy Com Univ Education*, Third Report, pp 289 and 305 and Final Report pp 137–139) Of Oxford and Cambridge students, 82 per cent before entering the Final Examination for M B (Rolleston *Lancet* 1912) take the Conjoint Diploma In the Cambridge Examination lists these qualified students are noted and are not examined again in the smaller practical details of the nature of 'cram' which exercise only the memory As there are more than five-and-twenty qualifying bodies in the United Kingdom, and the number is increasing the standards for qualification, in spite of the care taken to regulate them by the Medical Council are very unequal This one portal

proposal was supported, in 1911, by Sir Thomas Barlow (then P R.C P) and Sir Henry Butlin (then P R C S), but it was opposed by the London and some Northern universities for reasons some of convenience and some apparently superficial difficulties of a self-regarding kind If hereafter these bodies can be conciliated the Conjoint Examination, now forced into competition with the university degrees degrees which by a reverse competition with the Conjoint Diploma are diminished must be thoroughly reconsidered now as a common portal to practice, it is rather too exacting at each examination about 50 per cent of the candidates are rejected It is difficult to attribute most of these heavy rejections to bad teaching or to idleness they come of competition with the universities

The Curriculum The brevity of life the infinity of art and the sighs of mankind are an ancient story but if to Hippocrates when science and art were small this contrast were bitter what may be our groaning under their modern sweep and complexity The range and variety of the subjects of the medical course of five years in Great Britain put no little strain upon our students and the corresponding demands for the same period abroad are prodigious The German medical student a hard headed and diligent youth somehow makes terms with them but at grievous cost to the humanities Much of his human quality and of care for many of the minor therapeutical aids and resources which make for the consolation of the sufferer are merged in academic principles and scientific impassivity If in the waywardness and seasonable tides of a more natural social growth we in England are slower and seem irresolute and unsystematic it is because we have a deeper instinct and sympathy for the complexities and contingencies of human life and of the individual and for the supremacy of moral issues Give us time and our work is wiser deeper and more comprehensive Growth is blinder and slower than drill but it lives when drill is dead

Let us therefore beware of so cramming the curriculum that the filling and drilling of the intellect and memory shall occupy every minute of the student s life give him time also for the humaner social influences and the life of the imaginations But if more and more claims are made for enlargement of the scientific equipment and elaborations of method if we are not to stupefy the student or empty the profession one or other of two issues must appear we must either extend the time of studentship or set out as here proposed, alternative courses of study the one more utilitarian the other more disinterested the one course for the practitioner of to day the other and larger for the practitioner of to-day and to-morrow, the one course concluded by a diploma—as of the Conjoint Board —the other by a university degree For whether we formally establish as in the legal profession two classes of practitioners or not this difference arises all the same

There is a foolish idea abroad that the higher levels of medical art and science are to be reached by plotting out later stages and more arduous examinations Thus the Fellowship of the College of Surgeons and the M D of London have been largely built up and rounded off by ill-digested and second hand requirements Neither body requires any attempt at original work A candidate for the London M D may send in a thesis if he sees fit, but of course so long as he can ride off on borrowed work he does not see fit The man of genius makes his way through any obstacles, though often damaged in the conflict but the ordinary man—such is the severity of Nature—must build his foundations on the scale of his superstructures Top storeys cannot be added at will without corresponding breadth and solidity of the substructures If a medical student begins his professional training with a view to a diploma he cannot in the later stages of his course put on a larger and wider education without starting again more or less from the beginning He must enlarge his grip of physics, penetrate more deeply into chemistry physiology and pathology and so on So the student who from the outset aims at a university degree must lay for himself a broader and deeper foundation To pile more and more technical acquirements on an inadequate foundation of general and scientific education illustrates again and again the old Greek saying that much learning does not make wisdom We see too many men so trained their knowledge patchy ill digested, and without any large perspective they are like Télémaque 'Qui semblait n avoir jamais compris ces maximes quoiqu il en fût rempli' The university student in his longer curriculum should be open minded and trained in exploratory views and methods the diploma student for whom five years should suffice, must be content with much dogmatic instruction for as in the years of studentship the mind is moulded such on the whole in later years will be the fashion of it

Now if this be so those universities which offer a M D or M B degree in five years are deceiving their students It is hard work enough to pack a diploma course—a course of 'medicinal' science and utilitarian medicine—into five years if so a university course built on a much larger physical and chemical foundation and a larger ontogenetic and phylogenetic biology a course containing also the larger subjects of biochemistry morphology embryology experimental pharmacology and pathology advanced bacteriology comparative pathology and progressive clinics cannot possibly be surmounted in less than six to seven years Even the German student does not complete it in five years his average time is six To meet the needs of a few advanced students the universities retain the nominal five years limit but they know that usually the limit will be exceeded I repeat then, that for a university to hold out to freshmen the prospect of a degree in Medicine in five years is either to deceive him or to degrade its own standard and function The consequence is that a university degree in Medicine is too often granted for superficial merely utilitarian and ill digested instruction in a score of subjects which really amounts to no more than an ordinary qualification The diploma student should begin from his first week with anatomy and be content with descriptive and surgical anatomy though he should be taught one at least of his sciences more medically so that he may realize what knowledge is For the rest, he must be content with medical currency

Clinics This is the strong side of English medical education in the formation of the practical physician and surgeon it is incomparable unless it be rivalled by some of the best medical schools in the New World which have grown on the pattern of it With us the teaching of practical medicine grew out of apprenticeship, while the universities were content ks unreal and outworn

abstractions which they called Theory ' of Medicine the hospital schools here keeping in touch with Nature Here as in all the history of the profession inner medicine was saved by surgery a department nearer to Nature and facts and in which until quite recent times far more efficient work was done Of late years unfortunately the imperative conditions of aseptic surgery have deprived the bulk of the students from familiar access to operation work and moreover have dissolved the old co-operation of staff surgeons in the " theatre These are grave disadvantages not yet counteracted Not only by the profession is our clinical instruction regarded as satisfactory but in its subordination of formal to clinical lectures and as a synthesis of lectures with tutorial discussions intimate bedside observation and of late a growing intimacy of clinical with pathological and laboratory work it is regarded by teachers in other faculties and callings as exemplary It must be admitted however that only within the last few years has pathology which for many years took its solitary way been brought so near to medical practice as to carry it above stationary and narrowly empirical axioms The fusion is as yet by no means complete

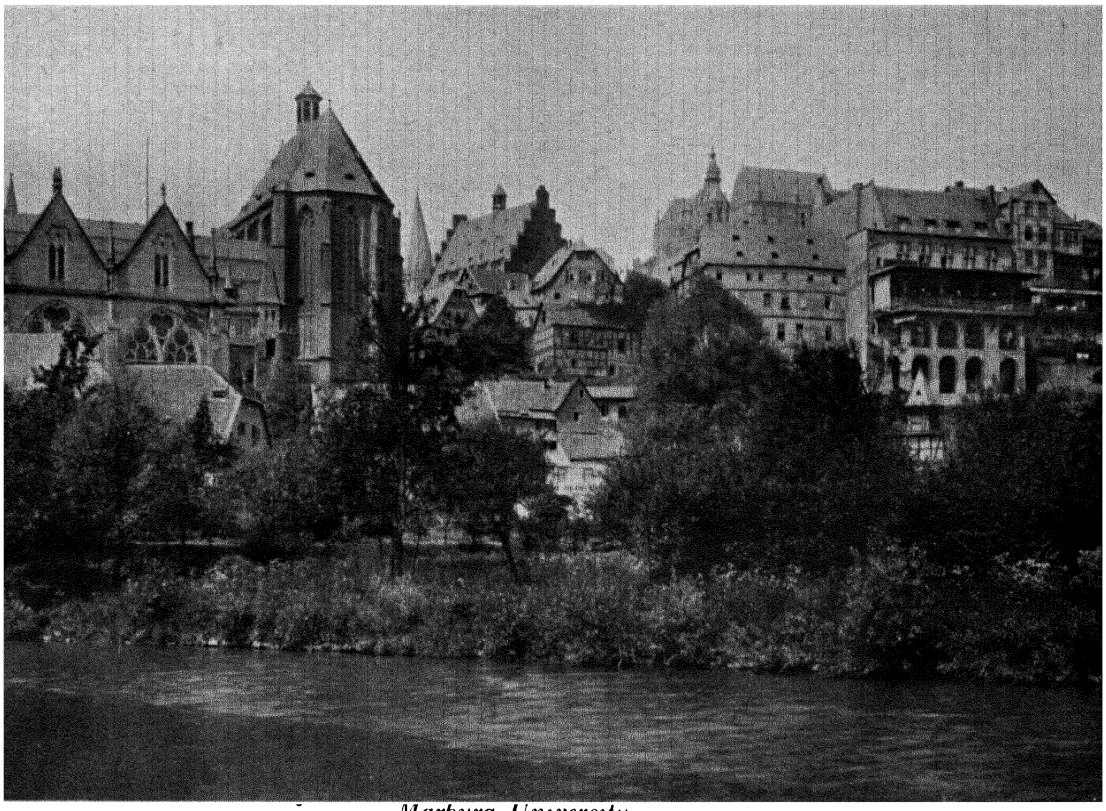
It is obvious that if we are to keep a hold on this close apprenticeship of teacher and student to Nature the classes must not be too numerous In Scotland where the hospital schools are fewer and the classes therefore larger the difficulties of access to the bedside have thrown their schools as the Scotch teachers themselves regret too much upon systematic lectures to large audiences to the loss of individual and tutorial teaching and of intimacy with the patient With a people less earnest than the Scotch this disadvantage by no means unfelt even by them would tell more evidently against success The reaction against formal lectures may however be carried too far They serve to place facts and principles in due order completeness and perspective moreover there is something in the spirit of the crowd and in the personality of an inspiriting lecturer which have their own special and unforgettable influence Such lecturers will be comparatively few they will not vie with text books they will not be too didactic mechanical or elaborate they will seem at least to be spontaneous they will consider the understandings of their hearers and they will then have learned beforehand how to select and articulate their words to modulate their phrases and to use emphasis and repetition effectively Above all things a lecture should never be read To lecture well is a gift not bestowed on every man Let the born and trained lecturer be charged with this office other men are warm with a quieter enthusiasm and may be clearer and more stimulating at the experimental table or the bedside In London the intimacy of clinical occupation and individual variety of teaching is favoured by the many hospitals each with its own medical school while these again by drawing away some students from the provinces make the numbers manageable by their smaller staffs Indeed the smaller classes of the provincial schools the nearer access to laboratory and ward and the excellence of certain teachers in many of them, offer advantages which might well retain more of the students who now flock to London It is remarkable how good are the material equipment and the work done in many a provincial hospital, even where there is no school If, under due inspection a few of these minor hospitals could be utilized for some part of the clinical teaching the student would benefit in intimacy and elbow room the honorary staff and the patients by the stimulus of teaching and criticism

In London, to put its great hospitals at the head of the technical schools in all faculties two reforms are needed First a system of compounding which should make the student of any one school free of all at any rate in his fifth and sixth years In such a scheme the special hospitals should be included more or less reserving in them classes with special fees for advanced and usually post-graduate work Secondly more organization for research If our hospital schools are as admirable for the practice of to day as we believe them to be they are not in the van of scientific progress they are not adequately organized to make the medicine of to morrow

Our fathers thought that discoveries in medicine might be bagged by ingenious persons a century ago this was possible The observations of Bright and Addison early in the nineteenth century might perhaps be thus regarded But if so this way of acute perception is no longer fruitful The nuggets have been picked up Discovery is now the end of a long and arduous series of investigations by the discoverer himself his colleagues and forerunners

In respect of organization for research arises the vexed question of hospital units and of the whole time or main time professor with a hierarchy of assistants and apprentices At best in a general hospital clinical research is at some disadvantage Patients come and go regardless of courses of experiment cases fit for particular lines of research cannot be selected the physician must take urgent cases as they come the rules of a large and various sick hospital cannot be submitted to scientific exigencies[1] members of the honorary staff are awaited by gangs of students who require all round teaching and so much of it as to exhaust the short times which the busy physician or surgeon can spare from his other engagements public and private Again for research experts of various sorts must be at the call of the professor if not organized distributed and directed by him expert chemists electricians histologists and the rest each trained in his own department If with this staff some senior pupils are associated then so much teaching comes in but the first effect of a battalion of investigators is to put the ordinary student on the outer circle and to make the professor a remote object of veneration Such a research staff if efficient to make the medicine of to morrow is not so well adapted to the ordinary bedside class work and this—our strength in England—must not be imperilled Moreover of the several members of an honorary staff each has his own qualities and it is well that the student should have the advantage of this variety One teacher is quick as a medical scout to note signal features or states of a patient such as fine tremor a spade hand a dilated or collapsed nostril and so forth another is quick to detect fallacies in argument some see differences more readily others resemblances some are able to summarize and give point to the facts that matter Whatever the services of the professor and his assistants to research, it would never do for us to discourage the teaching of the non professorial staff On the other hand,

[1] Hence our establishment of a Research Hospital in Cambridge



Marburg University



Photo by *J. H. Roberts*

Marlborough College, The Court

PLATE LXII

the exhaustive appraisement of the various functional values of the patients' conditions is a long, elaborate and skilled process one which in ordinary wardwork is not really achieved though by the recent establishment of clinical laboratories and the co-operation of physician surgeon, and pathologist, this is coming about Yet even still, many a pathologist never sets eyes on a live disease, the very subject of his study We are learning slowly even in private practice to consult the pathologist not as an outsider, but as a professional colleague at the bedside

In my opinion then teaching should be expected from all capable honorary medical and surgical officers and of course from those tutors and registrars who receive proper tutorial fees Having laid down these premises I may proceed to urge nevertheless that of the honorary staff one in each chief department—Medicine Surgery and Gynaecology—should be selected as a whole-time or a main time professor devoted to the medicine of both present and future His hours might be from 9 to 2 daily on five days a week with (say) two afternoon lectures a week In the rest of his time he could accept some private practice if his stipend were liberal (say £1 200–£1 400 a year) and his position considerable he would hardly be tempted by personal acquisitiveness to relax his duty In civil life we see how large is the number of medical men who prefer the certainty and fixed working hours of State and Municipal office to the larger but more irregular gains of private practice Besides clinical lectures delivered on two afternoons a week some portion of the professor s morning—one or two hours—should be given to bedside teaching By this arrangement the clinical teaching shared with his colleagues and his own organized research might both be provided for Ward tutors should take charge of the more elementary teaching guide the case taking and conduct seminary discussions and recitals on cases well known to the class

Clerkships, etc. Every student must act at least two months as dresser clinical clerk (10–12 beds), clinical laboratory clerk and necropsy clerk respectively but besides this the student should take notes of all the cases he can find time for His text books should for the most part be not plodded through, but read in chapters, as cases present themselves at the bedside or are still fresh in his memory

Therapeutics. Of late years there has been much lament over the decay of therapeutics and efforts are made to recall teachers and pupils to the business of *materia medica* and of artful prescribing As—to use Sir W Osler's definition—man is a drug-eating animal, when he sees drugs prescribed for other people he feels comfortable The layman is still a mediaevalist but medicine having hardly emerged from a millennial rubbish heap of drugs will never return to that mystery Drugs of proved efficacy are being selected and their values exactly estimated in the new pharmacological laboratories, but the main cause of the modern gap in therapeutics is not neglect, but a return—scarcely yet fully appreciated—to the so-called 'physical' means of treatment to control of the external conditions of health so lucidly, if provisionally, perceived by the ancient Greek physicians The modern physician leaving Galen for Hippocrates, is returning to the influences of external hygiene of "airs waters and places," of diet of baths and massage, of exercises, habits and so forth, together with certain other agents such as light and electricity, to our fathers unknown To these agencies, by the advance of chemical and physiological science, he is now enabled by certain internal reactions and operations to add means of controlling the various bodily functions, as by vaccines, serums, glandular secretions, and the like So that in these far larger visions of remedial medicine, some excessive alienation from drug therapeutics may be forgiven

Examinations. Some examiners demand more science and abstruser scientific methods, holding the half truth that given a sound scientific foundation practice is sure to take care of itself Other examiners dwelling on the other half of the truth edge away from science and look only to practical efficiency, they want to see how the man can sail his ship and often require too minute an inventory of his mental cargo Again it is not always remembered that there are many qualities of a candidate which may appear in a leisurely and conversational examination but hardly in the trial of fifteen minutes and a bell It is in part, to reconcile the somewhat conflicting aims of the more scientific and the more technical examiner that many of us are urging the "one portal examination" (p 1054) for all students intending to practice medicine

For examinations are of three kinds (*a*) to satisfy the teacher and the institution to which the teacher belongs (internal examinations), (*b*) external for passage from one system into another (*e g* from school to university or from university to one of the public services) (*c*) with outside assessors or inspectors (*e g* a university examination qualifying for public practice and official duties) Obviously under only one of these conditions can the teaching be "free' namely in the internal stocktakings of the teachers As freedom of teaching is of the essence of a university, external control—unless only advisory and subsidiary—and direction of teaching towards abstract didactic schemes are evils Happily in our own country, by tact and compromise, we get along with incompatible methods if under many disadvantages Let the State then have its way and undertake, or be responsible through the Medical Council for a one portal examination admitting to the Medical Register (p 1052) then the universities will be enfranchised for their own higher functions But if the university teacher has to keep an eye not upon what is best for the student s development but upon what will "pay' in an examination, or, again, not upon the larger and more disinterested principles of science but upon rote and the smaller technical detail, not upon inside growth but upon outside form, professional training will sink to the second best

The rules then, for free internal stocktakings and for external or guaranteed examinations cannot be the same If the universities blindly and unwisely cling to the prerogative of State qualification, they must submit to official schedules and external dictation, and these for Medicine must consist in large part of the narrower acquirements of immediate utility But these are the purposes not of the university but of the workshop The university should require methods not minutiae

Written answers to questions, or on topics, cannot be dispensed with Knowledge which cannot be expressed logically and accurately is hardly knowledge Yet it seems that a certain cleverness in

answering questions on paper may be shallow, and may give a false idea of the candidate s training and experience It is all important, then that practical trials should rank before paper work One may observe in a moment how the candidate sets himself to handle patients or things It is strange in class to see how many pupils stare at objects sent round and never think of handling them But the first act of a good workman is to take the object into his hands touching it and turning it over thus in a few minutes he will tell us what it is good for The English foreman is in this respect able above all men The defect of this faculty in undergraduates must then be due to the bookishness of school teaching too much black board and too little eye and hand

Hence the value of laboratory and hospital note taking A few years ago I proposed to call in these note books as part of the material for the M B examinations Many of the London clinical teachers cordially supported the proposal both as valuable evidence of training and also as a means of improving the work done others foresaw trouble and difficulties in the proposal However in any case these books should be submitted to the tutor every week or month and criticized not merely verbally the student should be made to repeat all defective experimental work

Not the least of the dangers of our present system is the growth of that noxious animal the professional examiner and therefore a shrinking of teachers from originality and responsibility In some of the minor stages of the M B degree—such as pharmacology general pathology hygiene the elements of toxicology and the like—a university might be content with the *testamur* of the professor who better than any one also knows the worth of each of his flock But teachers will not face this responsibility moreover as prospective examiners they may be concerned in the fees as a necessary supplement to an inadequate salary It is difficult to conceive a worse and a more mischievous system than that of some universities which advertise for external examiners and moreover elect them as it would appear on the discredited method of "testimonials" It is a curious thing that in Great Britain we stand for drill just where for once Germany stands for spontaneity the university examinations in Germany as distinct from the one State portal are far more liberal and far more leisurely than ours

In the university we retain the M B degree as a token of all round competency after this for the M D the matured students can indicate the subjects in which they have become especially interested and make proposals for research The M D is properly bestowed upon many men who since M B had given up all or large parts of clinical work

Universities are tempted and do not always resist the temptation to exhibit thorny questions, behind the scenes we know how this ends in a low standard of answer For M B questions should be few broad and simple questions which any senior student could answer somehow but which he should answer by short essays or commentaries for which a high standard should be required No marks should be deducted for fair opinions however displeasing to the examiner Examiners should always keep clear of their own crotchets

Viva voce examinations often degenerate into wit combats across a table disconcerting to the shy man and too favourable to the ready and adroit *Viva voce* examinations should always take the form of quiet chat at the bench or bedside When a candidate is clearly wanting on a certain subject it should be dropped and another proposed The crowding of a final examination into two or three days—'an intermittent fever of cramming' as some one has called it—is a sadly mistaken custom

Theses Research cannot be omitted from medical education the whole of the student s course should be designed in the spirit of research as a series of adventures in the kingdoms of Nature Thus before his curriculum is complete, some original essay some excursion without guides should be required of all university students, no student should be admitted to any university degree in medicine until he has shown that he can think in his craft and has made at least some investigation into its secrets

For this reason at Cambridge every candidate for M B and for M D must in each case submit a thesis in the first instance to the Regius Professor in the second to the M D Committee Moreover not infrequently the theses especially those for M D are submitted to experts But this is not all In London and perhaps elsewhere also there are manufactories of academic theses the sapless products of which have brought the thesis into disrepute Our fathers knew better they knew that an essential part of the thesis is the public Act or disputation this trial, which the candidate dare not face on borrowed stuff Cambridge was far sighted enough to retain The Cambridge theses are on the whole remarkably good and one interesting feature of the results is that the order of the M B theses is by no means that of the ordinary examination—often much otherwise The thesis and disputation discover the more thoughtful the examination the more acquisitive man Now, although many of these theses (many M B theses approach M D standard) do certainly extend and confirm medical knowledge yet this is not the immediate purpose of them A man who for years has been preparing for examinations when asked to do a "bit of work on his own" is quite at a loss As a horse which has always lived in a stable and if turned out is bewildered does not know how to use his liberty and falls off in condition so the candidate who day by day has been fed from information hoppers' on ready-made materials—for indeed laboratory routine may become as narrow and stereotyped as any bookwork—if set to find out something for himself is too often disconcerted and helpless Yet surely the test of an education is the quality of thinking produced! Let me quote in this matter the admirable words of the President of the Royal Society 'I have always been struck by the quite remarkable improvement in judgment independence of thought and maturity produced by a year s research Research develops qualities that are apt to atrophy when the student is preparing for examinations and quite apart from the addition of new knowledge to our store is of the greatest importance as a means of education' (Sir J J Thomson Address at Winnipeg) Such observation and reason Celsus had in view when he wrote Itaque ista quoque naturae rerum contemplatio quamvis non faciat medicum aptiorem tamen medicinae reddit' Another eminent professor writes "Often the students with the best degrees make the poorest research workers' A university then which does not insist upon a

formal piece of research from every candidate for a degree is coming short of its trust An M B graduate who has but this once, made an independent flight of the understanding goes into practice a different man Now of the candidates for the London M D , not one-ninth takes the option of offering a thesis As imitative work is an easier option their latent capacities are never developed they are only externally educated, the personal note is wanting they do not learn to think for themselves, or to anticipate difficulties and to overcome them when encountered

Graduate Work. Every student, the diploma student included should during his course pass through a short instruction in each of the several special departments such as the eye ear skin throat and other such clinics including the elements of insanity and be taught the simpler diagnostic manipulations of each Gynaecology will soon be split up into obstetrics abdominal surgery neurology and so forth But anything like a finished study of any one of these subjects must be left to the graduate year or years after graduation No student should specialize till he has completed his full course or the description of the specialist as a man of distributed ignorance will remain too true The able specialist is not the man who turns early from the main road of his profession into a side show but one who after a complete technical curriculum drives a further adit into the unknown

Some measure of legal medicine must come within the diploma course the Lunacy Laws for instance, as the doctor is a good deal of a State official and at least he must learn how not to spoil *post mortem* and other evidence for experts who may follow him for to them the more refined methods of toxicology observations of finger marks stains of blood or discharges and so forth should always be handed over

The conditions of study seem then, to point to the adoption in English medical education of the compulsory year after qualification of general and special practice under supervision In the hospital ward the student cannot learn the many little necessary and useful arts and devices of the successful family physician and elegant prescriber so that we have to read in the journals letters from indignant seniors plausibly complaining that the new assistant a university man it may be cannot make up a popular cough mixture or suggest pleasant solaces for testy old people But these accomplishments he can soon pick up and carry to a higher level C A

MEDICAL EDUCATION, HISTORY OF —Some of the earliest records of medical education are to be found in the Egyptian sacred books whose author is said to be Thoth the god of wisdom they contain treatises on anatomy pathology materia medica and surgery and were probably written about 1700 B C

Hippocrates and Galen In Greece the first recorded practitioner was Aesculapius the reputed son of Apollo who learned his art from the centaur Chiron His children all became doctors and two of his daughters were called Hygeia and Panacea The healing art was handed down from generation to generation in the same family, and in this way the guild of the Asclepiadae was established Hippocrates who lived in the fourth and fifth centuries B C was one of the Asclepiadae and was connected with the great medical school of Cos Upon his writings countless generations of medical students have been trained

Alexandria was a famous medical school, at which Herophilus carried out his work on the nervous system and here Galen came about A D 160 to continue his studies begun at Pergamum Later he settled in Rome and wrote a great many treatises on every branch of medicine which were in constant use as late as the seventeenth century

Mediaeval Leeches In the Middle Ages the monasteries were the seats of medical teaching and practically all the physicians were priests though as they were not allowed to shed blood surgery fell into the hands of laymen many of whom were barbers These formed guilds and companies into which their pupils were admitted after a more or less satisfactory examination The doctor of physic in Chaucer s *Canterbury Tales* gives us a good idea of the priestly physician of the fourteenth century Many of these studied at the great Italian medical universities such as Salerno Bologna Padua Modena and Siena or at the famous French schools of Paris and Montpellier

The Beginning of Modern Scientific Medicine In the sixteenth century the effects of printing and engraving rendered books possible the writings of Roger Bacon reached the medical student and teacher and began to shake their faith in the established authority of Hippocrates and Galen

In the seventeenth century the freedom of thought won in the sixteenth began to bear fruit Stenssen Boyle Malpighi Swammerdam Ray and Newton were at work, and great discoveries in anatomy physiology and embryology were made by men like Kerkring Leeuwenhoek Willis Glisson Havers Wharton Wirsung Bertin and Cowper whose names are associated with various structures in the body If no one but Harvey had done any work this century would deserve to be celebrated for its physiological progress In the seventeenth century a considerable number of home-made medical men were trained in the United Kingdom Edinburgh Aberdeen and Dublin Universities were now at work and the older London hospitals of St Bartholomew and St Thomas were training pupils The first record of a pupil (or cub) at St Thomas's is in 1551

Clinical Teaching In the eighteenth century, surgery made rapid strides under the influence of men like Hunter Cheselden Pott, and Chopart Instruction however was still given by formal lectures in Latin some parts of the writings of the ancients forming the text which was embellished by the comments of the lecturer Anatomy was still demonstrated by "anatomies ' performed in the presence of spectators and it was not until about 1750 that students made their own dissections But clinical teaching begun in Leyden about 1650 by Kyper followed by Sylvius and Boerhaave, gradually supplemented the formal lectures in the eighteenth century Edinburgh University acquired the Royal Edinburgh Infirmary in 1738 and has ever since used it for clinical instruction and the Vienna clinic was founded in 1753 In 1765 the Westminster Lying-in Hospital was established and clinical instruction in obstetrics was now available in London

The Medical Student. Old Style In the early part of the nineteenth century most English students entered the wards of a London hospital after having spent one or more years as apprentices to a practitioner but while learning their clinical work in

the responsible posts of clerks and dressers they also dissected and attended lectures on anatomy chemistry, and botany At the end of their studentship they passed the examinations for the membership of the Royal College of Surgeons and the licence of the Society of Apothecaries These were the country practitioners who still live for us in the novels of Dickens and Thackeray and their position in the social life of the time as well as the confidence and affection which they generally established in the minds of their patients points to the fact that—however much we may criticize it—the medical education of the period produced a class of men who contrasted very favourably with those of other countries The strong point of the system was that it raised self reliant sympathetic *human* men its weakness was that the faculties for organized observation and research were left unstimulated But although the average practitioner was undoubtedly a trustworthy master of his profession there was equally undoubtedly a large number of quacks whose only aim was to make money by deception without giving any time to learning the rudiments of medicine So numerous and dangerous did these become that in 1858 the Medical Act was passed by which a General Medical Council was appointed in close touch with the Privy Council

The Medical Register This body has the power of deciding what examining boards shall be licensed to grant degrees and diplomas to practise medicine in the United Kingdom and its recognition is granted only to institutions whose examinations fulfil all its requirements and demand from their candidates evidence of having gone through a medical education satisfactory in every respect to the Medical Council When such an institution grants its hall mark the successful candidate is placed upon the Medical Register and only properly registered medical practitioners are allowed to sue for fees or to sign a certificate of death

At any time a practitioner may be removed from the Register for unprofessional conduct or for failure to record a change of address Any one may still treat patients or sell patent medicines so long as he does not induce his client to believe that he is a registered and qualified medical man but if in spite of (or because of) his ministrations his patient dies he may not sign a death certificate nor can he sue the estate for fees

It will thus be seen that from the first day of beginning his medical education to the time of his removal from the Register by death or other causes a medical man is under the control of the General Medical Council but it is not generally recognized that the Council has no control over the general education of a youth seeking to become a medical student

The Council may for instance think it desirable that all medical men should know some Latin but it is quite open to any university to admit candidates to its medical training who have never learned any Latin at all There can be little doubt that the low standard of general education demanded for entry into the medical profession affects the status of the profession seriously but it must be borne in mind that the Medical Act of 1858 had for its object not the benefit of the profession but that of the general public

The Medical Student of To-day We may close this article with a brief review of medical education to day, taking a London medical student as a type

About 17 he passes his matriculation at the University of London which is now an examination within the reach of any average schoolboy, and enters one of the London hospitals In his first year he attends lectures and works practically at biology, chemistry, and physics, and passes the Preliminary Medical Examination at the end of the year

During his second winter session he learns anatomy physiology and organic chemistry and passes an examination in the latter subject His second summer and third winter sessions are devoted entirely to anatomy and physiology and at the end of his third winter he should pass the Intermediate Medical Examination

Henceforth till the end of his fifth year he devotes his time to pathology pharmacology, medicine and surgery attending lectures and practical courses and filling the posts of post-mortem clerk clinical clerk and dresser during which an increasing and graduated amount of responsibility is placed upon him

At the end of his fifth winter session he usually takes the diploma of M R C S L R C P, and, if he has done well in the school is awarded a house surgeoncy or house physiciancy before taking his final M B examination

If at the end of his third winter session he has impressed his teachers with his ability he is encouraged to devote the next six months to further work at anatomy and physiology in order to try to pass the primary examination for the F R C S the standard of which is very high and in which as a rule only a third of the candidates succeed

During the whole of his student career he is urged to take an active part in the athletic life of the hospital and comparatively few men leave London without becoming proficient in some form of sport

F G P

MEDICAL EDUCATION OF WOMEN IN ENGLAND, HISTORY OF—(See WOMEN IN ENGLAND HISTORY OF MEDICAL EDUCATION OF)

MEDICAL EXAMINATION AND INSPECTION IN SECONDARY SCHOOLS FOR BOYS—The object of medical inspection in secondary schools is to secure the best possible conditions for that further and more intensive culture of the mental faculties which is necessary in the case of those who are entering on occupations demanding intellectual skill and training and whose school education does not stop at the age of 13 or 14 years The degree to which such medical inspection should be carried and the use which may be made of it will vary considerably in different types of schools but it may be said in general that the higher the degree of intellectual training sought for during adolescence and early manhood, the greater the necessity for understanding the health of the scholar and the physical conditions under which he works We must also understand the relation between the two, if we are to prevent waste and to avoid injurious or disabling consequences When medical examination and inspection is conducted in higher grade schools whose curriculum ends about the age of 15 or 16 it will probably mainly concern itself with detecting the physical defects of sight and hearing, the presence of adenoids or enlarged tonsils, the recognition of the already developed forms of various disabling diseases such as heart and lung diseases, the detection of infectious diseases of the body and of

the parasitic diseases of the skin and hair and, finally, the general structure and conditions of school buildings, the drilling, and other outdoor (playground) life of the scholars But, where medical examination and inspection is adopted in schools that carry their intellectual training to a more advanced stage such as higher, secondary, and grammar schools—which prepare boys and girls through adolescence to the ages of 17–19—it is advisable for medical inspection and supervision to cover a wider range, and to be more detailed and searching in its methods It should take into consideration such matters as the physique and stamina of the pupil in order to gauge the degree of physical and mental stress to which he may safely and advantageously be put (See ADOLESCENT CHILDREN THE PHYSIQUE AND STAMINA OF)

The natural scope of medical inspection in secondary day schools is also different from its scope in boarding schools In the former it most conveniently begins with the consideration of the personal vigour and stamina of the individual boy and from this it proceeds to consider the effect of the great variety of outward conditions which influence his powers of work *e g* distance and nature of school journey hours of sleep and participation in out of-school activities (such as games choir practice or scouting) In order that proper home conditions may be secured to further the work of the day school it has become the custom in many places to adopt a 'Parents Handbook' which indicates the direction in which the co-operation of the home is desired and emphasizes Health Hints with a view to securing the best external circumstances for the school work of the boy The consideration of the provision made for a mid day meal for day scholars also comes within the duty of the school medical officer

In the case of boarding schools on the contrary such outward conditions should be the first matters to come within the purview of the medical officer in that they are provided by the school, and are uniform for all boys The school accepts responsibility for the due carrying out of the health necessities of out of school life It is therefore bound to see that the physical stress which it imposes particularly in athletics is not in excess of any individual boy s powers It is frequently supposed that all boys from middle-class homes who attend boarding schools are physically fit for all games and sports unless definite disease has been reported but this is by no means true There is as great a variation among well-to-do middle-class boys in a boarding school as among the boys in a day school Both demand skilled medical inspection and supervision

We are here concerned mainly with the outward conditions for homework and for play, which the day school has a right to demand from the home, and the boarding school should itself provide

Sleep. The need for prolonged hours of sleep for children though theoretically acknowledged is often ignored in practice sometimes from callousness, more often owing to difficulties of dormitory supervision There is a prevalent fear of providing opportunities for the indulgence in those habits of personal impurity which are the anxiety and curse of boarding-school life Immunity from this danger is sought by delaying the period of retirement to a time when it is supposed that the child is so fatigued as to fall asleep at once on retiring to bed Unfortunately, fatigue in some natures takes the form of loss of self-control and of undue susceptibility to mental excitement, so that the very measures taken to prevent the evil may have the effect of encouraging it The only effective method of prevention is adequate supervision of all dormitories and plenty of rest The health conscience of the school must be enlightened and aroused, so that, if the evil springs up, there shall be nothing to favour it and much to stifle it

The hours of sleep needed for each child vary somewhat according to the age and exhaustibility of the nervous system, delicate and nervous children needing more than muscular and vigorous ones

There is considerable difference in practice as to the amount of sleep allowed to children in boarding schools A writer in *The Lancet*, a few years ago, collected figures from forty public boys' schools He showed how great the shortage frequently was Other tables were drawn up by Miss Ravenhill as to the amount of sleep among the children of the poorer classes The following figures show also the amount of rest actually taken by boys entering the Manchester Grammar School from the time of going to bed to the time of getting up

They may be given as follows—

Age—Years	*Dr Clement Duke s desirable allowance*	*Boys on Entry at the Manchester Grammar School*	*Miss Ravenhill (London Elementary Scholars)*
5	13 5	—	10 9
6	13	—	10 6
7	12 5	—	10 5
8	12	—	9 9
9	11 5	10 5	9 5
10	11	10 5	9 4
11	10 5	10 5	9 25
12	10	10 25	8 9
13	10	10	8
14	9 5	10	—
15	9	9 75	—

The Journey to School It is only in exceptional cases that it is necessary to allow a longer period than three-quarters of an hour for the school journey from door to door The advantages of living at home generally outweigh the disadvantages of daily travel and the health of even delicate boys improves rather than deteriorates in a day school The greatest drawback to town schools seems to be the time spent in travelling to and from the playground and other centres of recreation when evening lessons have to be done as well Games enter so largely into the educational agencies of school that when they encroach on time allotted for home work it is advisable to reconsider the question of homework rather than limit the outdoor corporate activities

Schoolrooms Education in the open air is the ideal form of educational activity Efforts to secure it are particularly necessary in the case of delicate children On the other hand the storage of so much past human experience in literature and the social necessity of learning how to acquire knowledge from books and to possess the power of communicating it to others in writing and drawing, compel us in this climate to adopt during educational years a semi indoor life protected from the violence of the weather and the extremes of temperature The more the air in schoolrooms can approximate in its movement and composition to the outside air, which is uncontaminated by body-waste material—

carbon dioxide moisture, and emanations—the better As regards temperature, some modification is necessary, for, although the *active* human body can keep itself warm at quite low temperatures yet, when it is not in active movement an external temperature of 56°–60° F is necessary if the finer movements in writing and drawing are to be properly carried out If the temperature of the class-room rises above this, and if the amount of watery vapour approaches saturation, the work of the class suffers Deterioration of class work increases with each degree of temperature over 60°, and is particularly marked if the air stagnates, or the moisture approximates to saturation point Thus every class-room should be equipped with its maximum and minimum thermometer, and, in case of doubt, with its wet bulb thermometer Deterioration of work should be considered in relation to the readings of the thermometers for when the temperature rises above the 60° F , the percentage of moisture becomes of increasing importance with each extra degree of heat

Movement of Air When the open window space bears a large proportion to the area of the room, the movement of air is not generally perceptible, but when such space bears only a small proportion to the size of the room, the movement is felt as a draught The body of cold air entering in on one side drives the air right through the room to an exit on the other side The ingeniously contrived Chaddock windows, in which the opening constitutes a large proportion of wall space, avoid the sense of movement accompanying a draught by so arranging exits and inlets that even when they are both in the same wall they do not interfere with each other, but secure a complete circuit of air round the room

Hours of Work. Times and periods of work need careful supervision This supervision is common in a boarding school and evening work is therefore not often excessive Control and moderation are more difficult to secure in a day school Brightness and quick response of work done with a comparatively fresh brain in the morning may lead a school master to over-estimate the power of evening work This is particularly the case with delicate children who suffer from anaemia and the milder form of St Vitus's Dance Work before breakfast is nearly always imperfect and injurious Many years ago, Dr Edward Smith drew up tables showing the rate and vigour of the circulation of the blood and the depth of the breathing in different parts of the day He particularly showed the influence of food in improving both circulation and respiration It is probable the well-recognized differences which exist between those who work best in the early morning and those who work best in the evening depend on differences in the blood pressure If work has to be done by a child or young adolescent before breakfast, he should always fortify himself with a little milk and bread-and-butter, and should take such exercise in the open air as will stir up any sluggishness of the circulation The stirring up of energies in the morning lasts till about 12 o clock, then the energies begin to flag, and a further meal and period of relaxation is necessary to enable the body to recover The afternoon output of energy is of shorter duration than that of the morning, and requires the stimulus of food and recreation at a less interval than that between breakfast and dinner

School Curriculum. Medical inspection should concern itself with the consideration of the nature and character of the school studies It is not only that the study of some subjects is more fatiguing than that of others, but that there is so much variation in the stimulating capacity of different teachers, and in the working powers of different scholars that, while pressure may be advantageously exerted on some occasions, it is positively harmful on others This is particularly true of young, keen but not robust scholars under 14, whose responsiveness is quick, but whose powers of sustained attention are small Breakdown here tends to take the form of St Vitus's Dance About 90 out of 1 000 boys entering the Manchester Grammar School show a slight tendency to this, and need special advice after school life If such boys get overdone with homework, they frequently have to absent themselves from school with colds etc , to which they would be less liable if there was no strain of home-work and detention in school Memory and reasoning powers are more active in children with a fresh morning brain If the performances in the evening and in the morning are compared and analysed, the amount of reaction time for the thought to find entrance and execution will be found to vary greatly With many children home-work involving repetition or reasoning faculties, which lasts more than half an hour is practically impossible Moreover, owing to lack of uniformity in previous school training, one boy of 13 may be two or three years ahead of or behind another boy of the same age (though given good brains and health he will rapidly recover) The mental response of a boy of 14–15 is different from that of a boy of 12–14 He is less imitative, and does not pick up the sounds of a new language in the same way He has a greater desire for self-expression, and it is more difficult for an inexperienced or unwise teacher to handle him If a pupil has completely failed to make headway in a foreign language it is often better to give up the attempt and to train him in habits of accuracy and creativeness along manual lines

Reward and Punishment in School Life Rewards and punishments to increase the incentive to work, are justifiable in school life as long as they are not used to attempt something beyond certain clearly defined limits They may and often do over stimulate a boy with ready nervous response to neglect the physical side of his education and to use up his present store of energy at the expense of his future powers This is, unfortunately often the result of the present method of school examinations, school prizes and university scholarships and exhibitions have a tendency to encourage this abuse

Punishments are only justifiable if they secure improvement When they fail to do this they need reconsideration

For boys over 13–14 the punishment by a light cane is inadequate and scarcely inflicts pain Yet, as no hard instrument capable of causing injury to nerves and blood vessels ought to be used the only method of stirring up the nerves sensitive to pain is a blow with the birch rod across the bare shoulders and back Here again such precautions should be taken as would avoid the possibility of the birch falling on the more sensitive skin of the chest or abdomen when reflex action of a serious nature may supervene (Rupture has been caused in this way) Not more than six strokes should be given, and it must be assumed in any case that the master derives his right of punishment only from the parent, and, if the parent objects he should remove the boy from the school It is doubtful whether a master is

justified in assuming authority for corporal punishment against the expressed prohibition of the parent, who may present an action for damages

Punishment by Detention. It is a more difficult matter to establish just principles so as to regulate the incidence of punishment by detention In a boarding school, where there should be less danger of exhausting the energies of a boy twenty minutes to half an hour's detention and deprivation of school privileges, appears harmless and if infrequent, may be effective In a day school, all forms of detention present serious disadvantages, for the boy is often already fatigued by the day s work and has the prospect of a journey, as well as a considerable amount of homework yet to do It is generally unjustifiable except as a rare thing for small boys, and it is often injurious to young adolescents for, if often repeated it depresses their already fully-taxed nervous energies If frequently given to older boys who are capable of response to a more intelligent and less depressing appeal it becomes futile as well as irritating Its legitimate and successful use depends upon its rarity and the master's accompanying moral reprobation, which is generally useless unless the master has secured the moral approbation of class-mates There is however, a certain type of vigorous, outdoor boy who can only be brought to do his duty by being sickened by detention and deprivation of his natural activities We must never forget that *discipline depends on the readiness and desire to learn not upon the habit of obedience* This can only be secured among adolescent and freedom loving boys by a wise co ordination of all outdoor activities and privileges inspired by a wide sympathy and deep insight into boy nature The inexperienced and inefficient master will often be revealed by his excessive use of punishment An occasional act of severity may be necessary to show that there is Power behind Justice, but the continuance of severity indicates the lack of the essentials of teaching capacity A A M

MEDICAL INSPECTION IN GIRLS' SECONDARY SCHOOLS —The movement in the social development of England which demanded the improvement of the education of women, produced secondary schools of a standard comparable to the boys grammar schools As a result of the Schools Inquiry Commission of the sixties the old type of girls' school was frankly condemned In the foundation of the new schools came the opportunity for establishing a new tradition Far from ideal as the result has often been there is no doubt that, from the first as far as their knowledge led them, the pioneers of women s education did lay stress on respect for health and vigour of body Thus gymnastic exercises and games early found their place in the curriculum Such careful head mistresses as Frances Mary Buss recognized the dangers of physical training without a previous medical examination, and over thirty years ago she insisted on all her girls being examined before undertaking physical exercises

Her example was gradually followed in other schools The Association of Head Mistresses has pronounced the opinion that a system of medical inspection in their schools is advisable In 1916, however, after a medical inspection has been by law established in every elementary school for about nine years, only 49 of the 169 schools in the *Girls' High School Year Book* have any mention of a medical officer in their prospectus At least, half of these are men who are more referees than inspectors Their duty appears to be that of giving advice in cases of illness, infectious disease, or accident

Results Anticipated. The institution of medical inspection in a secondary school is intended, however, to have more far reaching results than the prevention of the spread of infectious disease or the treatment of casualties Incidentally, it helps to prevent epidemics in a more effective way than by the isolation of an individual patient For, where all the children are under good conditions and in a good state of health epidemics are less prevalent The object of medical inspection is, by careful consideration of the individual and her environment to produce the best possible development of the material provided This object is arrived at in the following ways—

1 Careful Individual Inspection on entry to the school, and re-inspections, either at regular intervals or irregular intervals, according to the plan adopted by the inspector Where records of height and weight are kept each year it may be sufficient to hold re-examinations irregularly when it appears necessary to class mistress drill mistress, or medical officer A re-examination at about 14 or 15 years of age should, however, be held, even if progress seems satisfactory, in case of children entering the school much younger In these inspections defects such as spinal curvatures deficient breathing enlarged tonsils, and adenoids are pointed out and the parents are advised to seek medical help Such individual arrangements as may be advisable and possible are then made for the pupils Special gymnastic lessons, modified drill, altered position in classroom for defective eyesight or hearing, are examples of what may be done

2 Supervision of the General Hygiene of School Life Ventilation, heating cloakroom arrangements are naturally all of importance to the well being of the school The dietary and the preparation of the food, the condition under which the games are played all require attention

3 Instruction of the Parents and Guardians in the Hygienic Requirements of the Life of the Growing Child Opportunities for giving this are found either in the routine examinations, or in lectures or talks which may be arranged for the guardians of the pupils

4 Instruction of the Girls in Hygiene As the girls of to-day are the mothers, teachers, and nurses of the next generation, it is essential that every girl should have some instruction in the care of her own health, and be interested in the development and care of the young The last school years give valuable opportunities for the provision of this instruction

The Inspector. When the duties of the medical inspector in a girls' school are considered, it is obviously desirable that such a post should be held by a woman The thoroughness of the physical examination of growing girls and the due appreciation of the special problems which arise demand this

The medical inspector should be a woman with some knowledge of educational problems and sympathy with educational ideals

The opportunities for efficiency and co-ordination between the medical officer and teacher on health and education respectively are at present far wider in those secondary schools where a system of medical inspection is established than in the elementary schools

The number of cases to be examined not being so large, more time can be spent on the examination, and the examiners get a more intimate knowledge of the child With a doctor in regular attendance at the school, opportunities for re-examination are more frequent

The Place of Medical Inspection in the School Life. Where there is co-operation between medical officer and head mistress, the curriculum either of the individual pupil or of a class of pupils may be modified according to the varying conditions of the health and development of the pupils This is obviously an advantage, particularly in schools where girls are growing quickly and where many of them are subjected inevitably to the strain of preparation to earn their living in what are called the learned professions For though many careers are now open to women, the avenue to the most attractive is still the matriculation examination of a university The strain of school life is followed by years of constant mental work, and it is therefore vital that they shall not be overstrained during this period

The examination of the pupils should be a condition of entrance to the school, and the payment of the inspector a charge on the school revenue, and not an " extra " for the parent to pay The value of systematic medical inspection is lost if either entrance examination or re-examination is not universal Parents generally welcome school inspection once they have experienced its benefits but if the examination is optional, the demands for exemption will inevitably come from those parents whose children most need the help which such an examination gives It is for this reason that the charge should come from the inclusive fees paid by the pupil Every " extra " must be carefully considered by the poorer parent whose child may benefit considerably by a medical examination

The presence of the mother at the examination is advisable and is generally welcomed Many valuable hints and warnings of commencing defects may be given without unduly alarming the parents C C

MEDICAL INSPECTION OF SCHOOL CHILDREN. —The present system of medical inspection in schools commenced as the result of Section 13 of the Education (Administrative Provisions) Act, 1907, which came into operation on 1st January, 1908 Section 13 is as follows—

> " 13 (1) The powers and duties of a local education authority under Part 3 of the Education Act 1902 shall include—
>
> " (*b*) The *duty* to provide for the medical inspection of children immediately before, or at the time of or as soon as possible after their admission to a public elementary school, and on such other occasions as the Board of Education direct, and the *power* to make such arrangements as may be sanctioned by the Board of Education for attending to the health and physical condition of the children admitted in public elementary schools "

As the result of this duty imposed upon local education authorities, there are in England and Wales over 1 373 individual medical officers acting as school medical officers or assistant school medical officers, or specialist officers in connection with the medical treatment of children In addition, there are about 1,765 school nurses, of whom about 1,172 are whole-time public officers

The immediate result of the activities of this large army of medical officers and school nurses is best illustrated by the fact that in London alone, in 1918, over 200,000 children were examined, 143,000 being found to need treatment, and 91,000 received treatment, while in England and Wales it is estimated that nearly 2,000,000 children are examined each year, yielding 650,000 defects, of which 325 000 receive treatment

The duty of the School Medical Service towards the children in our elementary schools may thus be summarized—

1 To discover, by systematic medical inspection, the ailing child, and to organize effective remedies

2 To protect the normal child by securing healthy conditions and by removing conditions likely to cause injury

3 To lay the national foundation of physical education and a sound physique in childhood and youth

" In other words," says the Medical Officer to the Board of Education, " School Hygiene finds or ought to find in the machinery of the School Medical Service the supreme opportunity of medicine in its curative, preventive and educational aspects The occasion is supreme, not because school medical work provides a unique opportunity for medical or surgical skill and technique but because the application of medical science to the disabilities of childhood strikes the problem at or near its beginning when disease is more preventable arrestable and even curable than at any other age period of life "

The amount of material for treatment is enormous there being not less than a quarter of a million children of school age seriously crippled invalided or disabled while not less than 1 000 000 children of school age are so physically or mentally defective or diseased as to be unable to derive reasonable benefit from the education which the State provides

The expenditure on the work in England and Wales from 1915 to 1918 (particulars on the following page) shows satisfactory progress to be taking place Grants up to one-half of the total expenditure are made by the Board of Education

The people immediately concerned in the work of medical inspection are the child the parent, the teacher the school nurse and the school doctor and it is the object of successful administration and organization to give each of these their proper place in the scheme and to secure the co-operation and cordial goodwill of all parties concerned There is reason to believe that in most areas in the country this object has been achieved

Organization of Medical Inspection. The Board of Education originally required the routine medical inspection of children entering the school and also the inspection of those leaving school These " entrants " and " leavers ' have to be examined therefore during each year, such examinations being referred to as " routine examinations ", and the visit paid to the school for the purpose of making these special examinations is usually referred to as a " routine visit " Subsequently the Board of Education added to the above two classes of children requiring full examination by selecting other ages in addition (*e g* the 8-year old or the 10-year old), but the description of these examinations remains the same

It is obvious that the objects of medical inspection would be achieved very slowly if the medical inspection were restricted to the above routine examinations, and so, in practice, it is necessary to arrange for every scheme for medical inspection

EXPENDITURE ON SCHOOL MEDICAL SERVICES

	1915–16	1916–17	1917–18
	£	£	£
Salaries of Medical Officers and Specialists	179,579	174,297	181,338
Nurses' Salaries	66,439	71,725	91,163
Travelling Expenses of Medical Officers and Nurses	17,579	16,620	18,377
Drugs, Materials, and Apparatus	11,440	9,987	14,510
Provision of Spectacles	4,023	4,063	4,826
Contributions to External Bodies (Hospitals, Infirmaries, Nursing Associations, etc)	43,403	44,843	50,603
Other Expenditure	95,407	96,270	111,658
Total	417,870	417,805	472,475
Grants paid	196,893	198,637	225,334

to include additional visits to the schools These visits are for the purpose of ascertaining what steps have been taken to improve the condition of children found previously to need attention, and also to examine special children brought forward by request of their parents, or presented by the teacher, or who come forward on their own account These are usually called "special visits," and the children found either at a routine or a special visit to require medical or parental attention are referred to as "special' cases

The School Card Every child in each school has its card Different colours are used for the two sexes, and either special cards are used for children found to need medical or parental attention or the ordinary cards are distinguished by the addition of a small clip which remains fixed as long as the child requires attention When the necessary parental or medical attention has been given the clip is removed and the card filed among those of children born in the same year The card contains spaces in which may be entered records concerning the age, height weight nutrition, cleanliness (body and head), clothing (quantity, repair cleanliness, boots), sight teeth attendance, parent's occupation, some particulars concerning the home and its occupants —all of which records should be filled in each year by the teacher Experience shows that the teachers' records concerning most of these facts are extremely valuable The teacher's experience about many of these items is infinitely more valuable than an observation made by the medical inspector or the nurse as the result of a single inspection The average teacher also soon acquires considerable skill in sorting the children in grades according to their vision and is able at the time of the medical inspection to present a certain number of children as having defective vision of some kind This represents an enormous saving of the medical inspector's time and, moreover keeps the doctor in his proper place as the expert to whom cases should be referred for an opinion The average teacher has been found to be extremely reliable in making the preliminary sorting of children The back of the card contains columns in which the doctor records certain medical facts about the child as the result of his examination The card thus forms a permanent record of the physical condition of the child at various times during its school history

The teacher should fill in his part of the school card of every child during January each year Records so made are very valuable to a medical inspector and provide him with useful information upon which he is often able to base a definite opinion

The school cards should be kept neatly filed at each school The most convenient method is to file them in age groups (i e children grouped according to their year of birth) Cards of children requiring attention may be either filed separately or distinguished by a clip, which is removed when the attention has been given Care in these details is a great help in the medical inspection work and, by decreasing the time required for the doctor's visit, prevents unnecessary interference with the routine of the school Duplicates of the school cards are often kept at the office of the school medical officer Such duplication involves clerical work only, and is carried out by sending the cards to the medical officer's office after each inspection

School Apparatus. At each school there should be provided a weighing machine, a box or file for school cards (with the necessary index cards), height measures, tape for chest measurement, and sight testing cards

Work of Teachers. It is difficult to imagine any successful scheme of medical inspection in which the teachers are not expected to play a very prominent part It will be a bad day for the teachers and for the children, and also for the whole scheme of medical inspection, if at any time the medical inspection work comes to be regarded as something altogether apart from the work of the teacher, which has to be carried on by occasional visits to the school Practical experience has proved conclusively that the good results of medical inspection are most pronounced in those schools where the teacher is an enthusiastic helper in the work In some areas, particularly in some large towns, it has been found possible to arrange for a staff of nurses to undertake a good deal of the work referred to above in the way of filling up the school card, but there is no reason to believe that a nurse is more capable of doing this than the ordinary teacher The nurse is most useful as assistant to the doctor at the time of medical examination, and it should not be necessary for her to do work which is better carried out by the teacher

In any given class of, say, fifty scholars, the whole of the cards should be filled up easily in less than two days of school work. The following year the additional work would occupy one day or less, so that the average time given by the teacher to filling up the school cards would average little more than one day per year during the nine years' school

HAMPSHIRE SCHOOL CARD.

(Actual size 10 × 6 inches)

FRONT OF CARD

HAMPSHIRE SCHOOL CARD.

Name _____ *School* _____ *Ad No* _____

Address _____ *Born* _____ *Vacc Mks* _____

1 Date Examined									
2 Age									
3 Height (in Inches)									
4 Weight (in Pounds)									
5 Cleanliness — Body									
5 Cleanliness — Head									
6 Clothing — Quantity									
6 Clothing — Repair									
6 Clothing — Cleanliness									
6 Clothing — Boots									
7 Sight									
8 Teeth — Total									
8 Teeth — Decayed									
9 Standard									
10 Attendance									
11 Cause of Irregularity									
12 Parents' Occupat n — F									
12 Parents' Occupat n — M									
13 House — Bedrooms									
13 House — Living Rooms									
14 Persons in House — Over 14									
14 Persons in House — Under 14									

15—HISTORY (Insert age of child at time of illness)

Measles	
Whooping Cough	
Chicken Pox	
Diphtheria	
Scarlet Fever	
Mumps	
Small Pox	
Rheumatism	
Tuberculosis	
Fits	
Other illnesses	

DIRECTIONS TO HEAD TEACHER BY S M O

BACK OF CARD

Name _____ **SPECIAL FEATURE** _____

Date of Examination					Date	OBSERVATIONS BY MEDICAL OFFICER	Notices Issued	Initials S M O
1 Parents Present								
2 Nutrition								
3 Deformity								
4 Paralysis								
5 Rickets								
6. Tubercle — Glandular								
6. Tubercle — Pulmonary								
6. Tubercle — Osseous								
7 Skin Disease								
8. Heart Disease								
9 Lung Disease								
10 Anaemia								
11 Epilepsy								
12 Chorea								
13 Other Disease								
14 Nose and Throat — Articulation								
14 Nose and Throat — Breathing								
14 Nose and Throat — Tonsils								
14 Nose and Throat — Adenoids								
14 Nose and Throat — Glands								
15 Ears — Hearing								
15 Ears — Discharge								
16 Eyes — Diseases of								
16 Eyes — Squint								
17 Vision (Distant and Near)								
18. Mental Capacity								

life of the class Of course, it is neither necessary nor advisable that the whole of the column should be filled up during the same day, and the work will be lighter and more interesting if similar items on each card are taken at one time Many teachers are able to combine this work with several interesting school lessons

Arrangements for the Medical Inspection. A notice is sent to the head teacher of the school, suggesting a date for the medical inspection, and as soon as the head teacher has replied, the appointment is fixed Invitations are thereupon issued to the parents informing them of the inspection, and asking them to be present

The teacher is invited to present at the time of the visit of the medical inspector any children concerning whom a medical opinion may be considered desirable This is most important as the teacher is continually dealing with large numbers of normal children and his opinion concerning a possible abnormality is always worth listening to Out of a group of 5 630 children so presented by the teachers no less than 4 800 were found to need attention

Teachers should be instructed to bring forward for medical examination all "boarded out" children and others not living with their parents as it is possible considerably to improve the lot of many unfortunate children in this way In particular, there should be special attention given to children whose parents are in receipt of outdoor relief Such children are often underfed, and it is an advantage if one or two meals can be provided for such children at the school

Children Requiring Attention. Children found to need medical attention have a note made upon the card, and their parents receive a notice calling attention to the fact that medical attention is desirable and requesting them to obtain medical advice at once Other children are found to be neglected as regards cleanliness clothing boots etc and the parents of these receive proper notices

The following table shows the percentages of certain defects amongst all children inspected (routine inspections only) in 1915 as indicated in the school medical officers reports for ninety areas except in the case of vision the figures for which are based on the inspections in thirty four areas—

Defect	Percentage Defect
Clothing defective	5 25
Footgear defective	10 72
Uncleanliness of Head	14 19
of Body	6 21
Malnutrition	13 25
Disease of Nose and Throat	20 73
External Eye Disease	2 42
Ear Disease	2 54
Dental Disease	69 12
Disease of Heart and Circulation	3 58
, of the Lungs	3 61
Nervous Disease	55
Skin Disease	1 81
Rickets	4 21
Deformities	1 95
Tuberculosis (non-pulmonary)	39
Speech Defects	1 33
Mental Condition	5 09
Defective Hearing	11 08
,, Vision	17 30

Amelioration. The organization of methods of treatment for these defects is dealt with elsewhere Broadly speaking, the chief methods may be summarized as follows—

Medical and surgical defects treated by—

1 School clinics
2 Arrangements with hospitals
3 Private practitioners
4 Poor law doctors

Defects due to parental neglect treated by—

1 Public measures, such as cleansing stations, school meals, organization of voluntary associations, etc

2 The education of the parent by school doctors and nurses and teachers, accompanied by measures calculated to cause the parent to develop a sense of responsibility, such as the prosecution of the parent of the persistently verminous child R A L

MEDICAL INSPECTION ROOM.—(See Buildings, School)

MEDICAL TREATMENT OF SCHOOL CHILDREN.—(See Clinics, School)

MEDICI SOCIETY, THE —This was founded in 1908 in order to publish the finest facsimile reproductions of great paintings of which modern photographic methods are capable Before the foundation of this Society, attempts made to carry out work of this character in England had been unsuccessful, and it was not until 1911 that any degree of reliance could be placed on English ability to overcome the difficulties due to the variable British climate The first English-printed Medici print was issued in 1909, and during the first five years over 60 per cent of the prints were of English manufacture, and over 90 per cent of the plates in preparation in 1914 were in English hands In 1908 the only suitable paper was manufactured in Italy, but since 1910 English manufacturers have been able to supply all the paper used by the Society

The business of the Society is the production of works for sale, and for the purpose of exhibition and sale it has galleries at 7 Grafton Street, Bond Street, London, W and at 63 Bold Street Liverpool A second branch of the Society's business is the issue of the Riccardi Press books, which form a series of volumes pre-eminent as examples of the highest perfection in the art of printing

The Medici prints provide a selection of perfect reproductions of the Great Masters obtained by its special method of photographic collotype in colours Subjects are chosen for their artistic value and beauty and particular care is taken to provide copies of frescoes or paintings in danger of destruction or likely to be taken out of the country The works copied are selected from art treasures in public galleries, as well as from collections of private owners

The subscribers to the Society pay a membership fee of £5, and secure by one payment full privileges for life Members are entitled to a perpetual discount of 5 per cent on prints 15 per cent on frames, and 5 per cent on second-hand prints or frames A special educational rate is allowed to schoolmasters and others purchasing of the Society for education purposes

The Society's system of framing is aimed at providing selected styles of early Italian and other frames, specially suited to every kind of print issued

The Riccardi Press issues books on Art and Archaeology, General Literature and Classical Literature They are illustrated with reproductions of water-colour and other drawings

MEGALOMANIA.—The term "megalomania" has been used to describe two different states of mental disorder Employed originally to describe the grand delusions of general paralysis of the insane, it is now generally used in referring to the exalted delusions of delusional insanity Exaltation has a normal foundation in castle-building or day-dreaming and is a part of vigorous mental life It may, however be indulged in to excess and in a neurotic person, become so dominant that, after an attack of mental disorder in which the control of the higher centres is removed, the day-dreams obtain belief and become fixed and systematized as delusions The grand ideas of the general paralytic are vague diffuse contradictory absurd without reasonable support, and with little relation to actions or conduct the man who claims to have an income of millions per minute will in the next breath, beg humbly for a pipe of tobacco In the megalomania of delusional exaltation on the contrary the ideas are fixed and systematized developing logically and progressively The belief is complete, and is manifested by consistent action and expression thus a patient with the delusion of being Christ grew his hair as seen in Leonardo's "Last Supper" The step by step development of these delusions may sometimes be observed in oncoming insanity and more rarely their devolution as the patient recovers

Delusions Delusions are endlessly varied patients become multi millionaires kings emperors of the world popes saviours and even divinities Foville stated that they always developed as the result of chronic hallucinations especially associated with ideas of persecution but this certainly is not the case They may develop as already mentioned in neurotic persons with habits of day dreaming or in states of abnormal exaltation without hallucinations The possession of uncontrolled power has probably developed this disorder in some potentates Maudsley says that it occurs especially in illegitimate persons and Savage that it is common in governesses The disorder is sometimes based on an inherited belief

Chronic megalomaniacs occupy themselves most industriously, and, apart from their delusions, may be intelligent and well conducted, some become capable of controlling the expression of their delusions, and follow their wonted occupations in intervals of freedom from active disorder The rightful heir of the Hapsburgs in the writer's experience, carried on a successful business, the representative of another royal family wrote and printed a large volume to prove his claim while similarly engaged, his father had held the same belief These patients often live to an advanced age

H RAYNER

MEIKLEJOHN, JOHN MILLER DOW (1836–1902)—The son of an Edinburgh schoolmaster who after education in his father's school, took the M A degree at Edinburgh University, being gold medallist in Latin there in 1858 He studied German philosophy, and before he was 20 had written for Bohn's Library a translation of Kant's *Critique of Pure Reason* For some years he was a private schoolmaster in the Lake district, and afterwards in London About 1862 he began a long series of school books with *An Easy English Grammar for Beginners*, which he published for himself in Paternoster Square This was followed in 1869 by *The English Method of Teaching to Read* and in 1870 by a criticism of the Revised Code of 1870 in reference to the teaching of reading In 1874 Meiklejohn was appointed an assistant commissioner to the Endowed Schools Commission for Scotland and in 1876 the first Professor of Education in St Andrews University At St Andrews he exerted strong influence on current educational ideas His school books deal chiefly with history geography and literature About 1890 text-books on geography, history, and grammar were issued, which became highly popular, and did much to raise the standard of school books On literature, Meiklejohn's chief books were his *Grammar* (1890), *Art of Writing English* (1899), and *English Literature* (1904)

MELANCHOLIA (from *melas*, black, and *chole*, bile) was thus named by the humoral pathologists who attributed the disorder to the secretion of black bile Melancholia is the most frequent form of mental disorder occurring especially in women and in the well-to-do or sedentary classes It is often based on an inherited predisposition, and is more common in the later decades of life The exciting causes are usually of slight intensity but of prolonged duration such as ill-health toxic conditions overwork anxiety worry and grief, especially when these are accompanied with sleeplessness

The symptoms observable are exaggerations of the normal expressions of depression grief or despair and of the bodily attitudes and gestures accompanying them, but abnormal in their persistence and monotony The chief bodily symptoms are sleeplessness and emaciation Appetite is lessened or altogether in abeyance food being refused in extreme cases from absence of appetite from perversion of taste, from desire to effect starvation, or from delusions of various kinds All bodily functions are lessened in this disorder The intellectual limitation ranges from a difficulty in concentration of attention to a complete fixation on one idea The volitional arrest varies from apathy to complete passivity, and its disorder from mere restlessness to unceasing gestures and monotonous exclamations There is commonly loss or perversion of all feelings—domestic, social, or religious—with self-feelings of unworthiness, wickedness, or criminality, and delusions may be based on any of these Fear is always present, and suicidal impulse is always to be suspected

Treatment. The prognosis in melancholia is more favourable than in any other form of insanity Fifty per cent of those admitted to asylums recover, one-half of them within three months and four-fifths within the first year Recovery occurs after long periods of intense disorder, is very complete and enduring, many leading long and active lives without relapse The prophylactic care of persons inherently predisposed to melancholia is the main point of interest from an educational point of view The predisposition is often inherited but care must be taken not to exaggerate the family predisposition the fear of which is sometimes more injurious than the predisposition itself Predisposition is usually shown by thinness in childhood and at puberty They are usually of slight build, and of dark complexion, have frequently

considerable mental power and energy, but are easily exhausted, so that periods of great activity are followed by states of inactivity Children of this type should have their assimilative powers increased by the training of the heat centres (*q v*), and by careful development of the respiratory and circulatory functions Digestion requires special attention in every respect Food between meals is to be especially interdicted Alcohol, tea, coffee, and tobacco should be of very limited use Sleep habits should be very carefully attended to, especially if, as is often the case, there is somnambulism or night terrors

Habits of day-dreaming must be discouraged whilst hypersensitiveness and egoistic tendencies must be checked moral and physical timidity should be controlled and self-reliance especially developed They should not be encouraged to overwork, and should be guarded from mental or emotional strain Great care is needed at puberty to protect them from sexual troubles These persons should be directed to occupations not liable to strain and stress H RAYNER

MELANCHTHON, PHILIP [**Schwarzerd** (1497-1560)]—His surname was transliterated after a prevailing fashion to Melanchthon He had two advantages in his great *rôle* in the reform of German education He was himself a famous scholar and the friend of scholars He enjoyed every academic advantage in youth his learning, even when he was only 20, was known to be prodigious And while the Reform party felt that in him they had a champion equal to any, his gentle and studious disposition made him beloved in circles other than those of the religious leaders of the Reformation and he had a standing of his own apart from theological controversies He himself always conceived that his special service was to be rendered rather in the regions of pure scholarship than in fields of dialectic and theology, where he was nevertheless an acknowledged master

In the second place, he was the close friend of Luther, who cherished for him a deep and openly-expressed affection and admiration Thus men who had heard Luther's stirring appeals for educational progress turned confidently to Melanchthon for the guidance they required To these advantages he characteristically added a third Shortly after his settlement as professor, he established a small private boarding-school in his own house, limiting the number to such as he could personally instruct He was thus able to judge and test his methods, and speak as a practical schoolmaster

Educational Work. At 23 he took up duty at Wittenberg as Professor of Greek, and made a sensation by his opening address on the reform of the curriculum, and then by his lectures on Homer and Titus Although as years passed he was more and more drawn into theological work for the Protestant cause, he became equally famous and active as the great consultant on educational problems He published new school books, an easy first Latin Reader, many editions and commentaries for school use, and Latin and Greek grammars He represented the view that proper grammatical drill was a necessary foundation for the acquirement of a language against those who tended to rely too greatly on conversational and reading methods He was urged to become the Rector of a new city high school or gymnasium at Nürnberg, and, though he declined the invitation, he took a large interest in the scheme, drew up the constitution and curriculum, and advised in the appointment of teachers. This was only one conspicuous instance of a function he fulfilled in fifty-six cities of Germany in connection with new gymnasia founded either by municipalities or the beneficence of princes.

In regard to elementary education, he was busy, in 1528, with the Saxon "visitation" of village schools He directed that primary instruction should be confined to Latin, and with a division of the school into three classes also that music be taught for an hour every afternoon

Melanchthon's greatest accomplishment, however, was the reform of the universities He was filled with the Humanist conviction that a knowledge of the content of classical literature would bring manifold illumination to the human mind, in particular, scholarly exegesis was the first necessity for theology "A theologian," he said, "must be first, a linguist, second, a dialectician" In estimating the Humanist position, we ought to remember that, in point of fact, almost the only works in mathematics, medicine, and natural science were to be found in the classic tongues Melanchthon contended for the place of pure scholarship in the professional curricula He drew up the statutes for Wittenberg University, of which those of Marburg Königsberg, and Jena were largely copies Nine universities were founded under his direct guidance, and through the imitation of these elsewhere, and the widespread use of his books, and the promotion of those who had been his students, his influence became so dominant as to earn for him the title "Preceptor of Germany"

It is not too much to say that the German University system is Melanchthon's monument If his influence upon the middle and secondary schools produced smaller and less enduring results, it has to be remembered that he had in view training leading to the clerical, legal, and bureaucratic professions, and in the nature of the case this could not attract the commercial population, while, in his time, the conception had hardly become possible that a curriculum based on native literature and history, elementary mathematics and science, and contemporary languages might provide at once a foundation of general culture and a preparation for practical business life R W S

MELLEMSKOLE.—(See DENMARK, EDUCATION IN)

MELVILLE, ANDREW (1545–1622)—Melville's celebrity as champion of Scottish Presbyterianism and spiritual independence is almost equalled by his educational eminence Born at Baldovy (Forfarshire), he went to Montrose Academy, and at the age of 14 astonished preceptors at St Andrews University by studying Aristotle in the original Greek In 1564, after graduating, he entered Paris University, acquired Hebrew and Chaldee, and learned from Peter Ramus to impugn the prevalent belief in Aristotle's inerrancy In 1566 he obtained a regency at Poitiers, in 1568 the Humanity Chair at Geneva where he also studied theology In 1574, his Scottish friends solicited the devotion to Scotland of his academic gifts and experience, while the death of Knox (1572) moved him to assume Knox's mantle Soon after arrival he became Principal of Glasgow University Melville had three academic aims (1) To raise Scottish universities to the highest standard of efficiency, particularly in clerical

training (2) to counteract a tendency of Scottish youth to complete in France their university education, (3) to emancipate Scotland from the mediaeval absurdity of a regent tutoring a student in all subjects, and to substitute the more rational method of each subject having a special teacher At the Reformation the Glasgow University instructors, except Principal Davidson, had adhered to Rome and abdicated academic office Successors were not appointed and when Davidson died (1572) instruction ceased Melville virtually refounded the university He obtained some needful endowments and a Royal Charter (*Nova Erectio* 1577) Aided by his nephew James Melville and other regents, he provided ample curricula and by 1580 classrooms were crowded In 1580 when St Mary s College in St Andrews was appropriated to theology Melville was induced to leave his "eldest bairn and inaugurated the new departure of his old *alma mater* Under him notwithstanding early opposition due to prejudice and vested interests St Mary s attracted numerous students including not a few foreigners Several masters of other colleges of St Andrews (*e g* Robert Rollock afterwards Principal of Edinburgh University) attended Melville s prelections and some keen opponents became warm admirers Royal hostility repeatedly interrupted his labours which ended in 1606 when he was summoned by King James to London imprisoned for years in the Tower and prevented from ever returning to Scotland Notable testimony was borne to his academic success when in 1621 Parliament unwisely repealed the Act of 1579 through which St Andrews University was reformed but significantly exempted St Mary s from alteration Melville spent the last eleven years of his life as Theological Professor at Sedan, where he upheld Calvinism against Arminianism

H C

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MEMORY.—It is customary to distinguish between memory and retention The latter term is used with a wider significance than the former It stands for that preservation of experience in the individual and the race which is essential for all growth and development, but which is not a state of consciousness

Memory is the retention of past experience, which is itself a state of being conscious The past experience is reproduced in the present with the consciousness that it is past It is reproduced as an idea In the present agility of a juggler there is retained all his past efforts yet while he is absorbed in catching balls he may not recall those experiences There is then no memory Should there recur to his mind, while he is thus performing, an incident from a previous exhibition, then there will be memory reproduction of past experience in the present by way of ideas

Remembering by Association Certain connections between the present moment of experience and the past experience reproduced as an idea have been formulated and used as explanatory principles of memory, styled "Laws of Association"

LAW OF CONTIGUITY A present experience which had previously occurred side by side in time or place with some other event has been said to be thereby associated with that event, and able to bring about its reproduction

LAW OF SIMILARITY A present experience resembling a previous experience has been said thereby to be associated with, and able to suggest, this past experience

LAW OF CONTRAST A present experience contrasting with a past experience has been said to be thereby associated with and able to suggest, this past experience

These three types of reproduction occur but the formulation of the type does not in itself explain the connection or association which is revealed in it It is more satisfactory to recognize two fundamental types and to give a general theory of association Viewed from the standpoint of purposeful activity, certain experiences in mental life are seen to belong together in the sense that they promote the same end or are actuated by the same interest Thus gives them an intrinsic connection whatever their relation in time whether they follow in immediate sequence or not As members of a common whole such experiences are directly associated, and any member of the whole may on its recurrence, suggest any other (*e g* the sight of an old college friend may serve to recall ideas of events or comrades from the college life of which that friend is a part) Most of the cases of reproduction contemplated by the Law of Contiguity and by the Law of Contrast fall under this type The "contiguous events or facts are members of some temporal or spatial whole the pair of contrasts are outstanding members of a group referring to the same basis of classification as 'giant' "dwarf" It is possible for a member of one whole to suggest an idea from a different whole if the two unities of experience have a link in common (*e g* the words of a stranger in a railway carriage may suggest an old incident in which he had no part) He expresses an opinion on current events using words which were used years ago *apropos* of a certain incident and now that incident with its setting and *dramatis personae* is reproduced in the mind There is no direct connection between the present speaker and the past but indirectly through the opinion expressed the unity of present interests is linked with the unity of the past incident, and is thus able to suggest it Most of the connections classed under the Law of Similarity would fall under this type of indirect association Whether ideas are ever remembered when they are neither directly nor indirectly associated with the present experience may be left an open question

By the theory of association the power of a member of a group to reproduce from memory other members of that group, must depend on the strength of the bond binding the group Experimental work confirms this conclusion Thus the pioneer experiments of Ebbinghaus demonstrated that it was far more difficult to learn by heart a series of nonsense syllables than an equal amount of sense, and that any increase in the length of the series gave rise to disproportionate increase in the difficulty of learning In such memorizing, the spatial arrangement and the sequence of the syllables are the only grounds of synthesis In learning sense there is a ground of synthesis in the meaning the sequence of ideas will determine the sequence of words Other experiments have demonstrated the value of rhythm as a bond of synthesis, even in the case of nonsense syllables The framework of the rhythm suggests the filling The importance of the intrinsic connection of ideas has been brought out by Ephrussi and Meumann These workers

showed that learning by heart proceeded more rapidly when the matter to be memorized, instead of being learnt in sections, was repeated as a whole The connection of ideas is thereby maintained, whereas in piecemeal learning it is broken, and useless temporal connections between the last line and first line in any section are established The value of spatial and temporal arrangement as a basis for association varies with different individuals, and with types of imagery In reproducing a list of words, the man who visualizes is guided by the spatial arrangement on the page, the man who has auditory or kinaesthetic imagery, reproduces the words by their temporal relations, the sequence of sounds or movements of articulation

Not only must the coherence and nature of the associated whole be considered, but also its relation to the suggesting member given in present experience A present experience may be capable of suggesting more than one set of associates In such a case, the line of suggestion followed may be determined by the recency or by the frequency of a given group of associates or again by the fact that the emotional colouring of one group is more congruous with the emotion of the present moment than is that of any other group The character of the present moment may, and in some cases does dominate the character of the reproduced idea It is the key in which the opening bars are heard in the present not the key of the original performance which regulates a remembered tune The determination of reproduced ideas by the present suggestion is seen very clearly when the present moment is part of a strong interest or purpose This interest not only controls the particular nature of the reproduced ideas but also governs the selection of associates (*e g* when one is considering a friend's fitness for a confidential post, one does not remember the colour of his tie or his favourite dish, but the traits in his character which indicate fitness or unfitness) Relevancy to the purpose in hand is the chief characteristic of such memory Herein it contrasts sharply with idle reminiscence, which, although it may be vivid and faithful to past experience fulfils no present interest Relevancy is the first quality of memory when this is in the service of thought or will Other qualities are ease of readiness in recall faithfulness, whereby that which is remembered represents past experience free from the admixture of imaginary incidents, fullness, whereby the reproduction is insured against vagueness and omissions This last quality must be subordinate to relevancy There is an art in forgetting

Forgetting. Lapse of time would seem to stand, first, as a condition of forgetting When there is no bond of intrinsic connection between items (*e g* nonsense syllables), the progress of forgetting is very rapid Given a connecting bond, forgetting will follow on anything which brings about the dissolution of the bond More important than mere lapse of time is decay of interest in that which furnished the bond This is illustrated by the disappearance of much of school knowledge with the ending of school life Recent research (that of P B Ballard) seems to indicate that, within short limits, lapse of time may mature rather than destroy bonds of association It has been found that children will reproduce a greater proportion of memorized material forty-eight hours after learning than at the actual time of learning Further, it appears that an old association gains more in strength by repetition than does one recently formed It has proved more effective to distribute a given number of repetitions over many days than to arrange many repetitions upon any one occasion Firmer associations are established by two repetitions daily for twelve days than by eight repetitions daily for three days

Apart from decay in the processes of past experience and bonds of association, forgetting may have its cause in conditions governing present consciousness A present experience may fail in suggestion through lack of intensity or absence of some feature The sight of an object may remain unsuggestive while the presence of its scent will occasion recall the presence of a certain environment will render incidents capable of awakening memories which in other surroundings aroused no response In this connection the question of repression is interesting Can forgetting be due to the repression of ideas which are subconsciously suggested? Some modern writers (*e g* S Freud) hold that this is the case Suggestion is inhibited from following certain lines of association by reason of the pain value of these associations The ideas in question seem to be forgotten and are incapable of reproduction in normal consciousness Under hypnosis they can be remembered, and they may also be reached by the method of psycho-analysis They may appear in dream consciousness either in their own character or in disguise The question is one which concerns psychopathology B E

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MEMORY, CASES OF REMARKABLE —The "art" of memory was specially cultivated in the ages before the printing press and often took away the necessity of the teaching and learning of writing On the other hand, the enormous facilities afforded by printing for securing the subject-matter of literature together with the enthusiasm for book-learning after the Renaissance produced many cases of remarkable memory The recognition of Christianity as a historical religion, founded upon "the Scriptures," in the Puritan time, yielded remarkable cases of memory in that direction, and the later cultivation of mathematical studies produced marvellous mathematical memories To illustrate

Ancient Times Themistocles, in Greece, is said to have been able to call the 20,000 citizens of Athens by their names This type of memory is paralleled by generals knowing all the men in their army, and the "royal" memory, which never forgets a face and the name of a person once met Seneca states that he was able to report, by sheer effort of memory, 10,000 words without any interconnection, each in its order of utterance, on hearing them once Of his friend, Pietius Latro,

Seneca affirms that he retained in his memory all the declamations he had ever spoken, so that he could reproduce them *verbatim* Pliny says Cyrus knew every soldier in his army by name, and that L Scipio knew by name all the people of Rome

Post-Renaissance. M A Muretus, in the sixteenth century once met at Padua a young Corsican who recited 36 000 names in the order dictated to him, and afterwards gave them in the reverse order Sir William Hamilton notes the following cases Leibnitz and Euler could repeat the whole of the Aeneid Donellus knew the *Corpus Juris* by heart Muratori, in making quotations had only to read the passages put the books back on the shelves, and *then* wrote out the words from memory Of Lord Macaulay it is said that he could have replaced *Paradise Lost* from memory had it been lost

Lepsius offered to repeat the whole of the Histories of Tacitus with someone to stand over him with a dagger and plunge it into him if he did not repeat it faithfully Thomas Threlkeld (*d* 1806) was a "perfect Concordance" to the Scriptures Any three words together (except mere connections) being mentioned to him he would assign chapter and verse or inversely on naming chapter and verse he could repeat the words

Mathematical Memory Euler formed to himself a table of the first six powers of all numbers from 1 to 100 and preserved it exactly in his memory Dr Wallis states that at night in bed he proposed to himself a number of 53 places, and found its square root to 27 places without writing down the number, and *dictated it from memory twenty days afterwards* (E Chambers) Extraordinary accounts are given of numerical memory of the uneducated Jedediah Buxton (see *Gentleman s Magazine* Feb , 1751) He could for instance square a number consisting of thirty nine figures by sheer processes of memory

Sir William Hamilton has shown that it is unsound to affirm that the development of memory can only take place at the cost of intelligence and, on the other hand that high intelligence can be found without the basis of a thorough memory But in spite of the comparative lack of cultivation of memory to-day in comparison with the past, there can be no doubt, educationally that it is easy to under-rate the importance of memory

F W

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MEMORY DRAWING.—(See DRAWING IN SCHOOLS AND COLLEGES, THE TEACHING OF)

MEMORY TRAINING —Memory consists essentially in the union which is established in the mind between two ideas or perceptions by their being frequently presented in conjunction An infant learns how to drink from a cup by remembering the particular muscular movements which led to success, a child learns to connect certain printed notes of music with the corresponding keys of the pianoforte Such associations become in time habitual and the corresponding actions automatic. The intellectual cultivation of memory depends on, first of all, attaining the clearest and most definite notions of the two ideas to be associated, and afterwards holding them before the attention while noting their differences, resemblances, and other relationships, so that when one idea is afterwards presented to the mind, the other shall be recalled by these relating notions

Leaving apart muscular and physiological memory, we may distinguish two great divisions of the subject Verbal Memory, dealing with the remembrance of words and phrases and Rational Memory dealing with ideas associated by more complex relationships

Verbal Memory. In the learning of long passages of literature it is remarkable that the simplest and most ancient method is still the most successful The Vedantic sacred literature some of which dates from 1500 B C has been handed down entirely by word of mouth The pupils learn a few lines of new matter each day, chaunting them aloud over and over again and constantly rehearsing the verses already learnt There are Hindu priests now living who can repeat from memory the 300 000 lines of the Mahabarata In recent times there have been many instances of minds trained by practice to memorize sermons or addresses listened to Thomas de Quincey benefited largely by being compelled to report mentally the sermons of his guardian

Rational Memory One of the most ancient means of assisting the memory was the one described by Quintillian It consisted in choosing the parts of a well known room, and to each part associating a mental image or symbol which would recall the matter to be remembered. This method is still advocated in many modern systems of mnemonics In the fifteenth century woodcuts and illustrations of a symbolical nature were made use of for remembering the contents of the Gospels or topics of sermons the visualized memory of the picture being easily retained in the mind, while its various parts were so designed as to suggest the associated ideas This principle too has been in constant use until recent years

The Figure Alphabet. In 1684, Winckelmann devised a method of translating figures into letters all of which were consonants Any desired vowels could be added so as to form words This invention was one which was destined to flourish vigorously down to the present day and there is scarcely a modern memory system which does not avail itself of the idea Grey, Feinagle, Aimé Paris, Bacon, Maclaren, Stokes, Loisette and many others have made large use of the principle The manner of use will be seen from the following example, taken from the lessons of William Stokes To remember that Jamaica was acquired by Great Britain in 1655 the figures 6 5 5 are in his special alphabet represented by the letters J L, L Therefore, we may couple the two ideas of Jamaica and 1655 more or less permanently together by saying "a JAM-MAKER makes a JELLY WELL." Such a mnemonic might serve for a few days' use, say in passing an examination but an intelligent person would be chary of encumbering his mind with such futilities The mnemonic is insufficient, too, instead of the figures 655 relating unmistakably to a date, there is nothing to indicate that they do not refer to area, distance, population, or some other feature The

translation of figures into letters and words enables many astonishing feats to be accomplished, but the true value of these was discerned by Sir Francis Bacon when he wrote that "he made no more estimation of such feats than he did of the tricks of tumblers, funambuloes, baladines, they being matters of strangeness without worthiness" In all such systems a standard list of words whose consonants indicate the ordinal numbers from 1 to 100 or more, is used as a table of "hooks" or "pegs" to which other ideas may be associated and their order in the list remembered

Logical Principles. The writings of Professor Alexander Bain and Dr W B Carpenter did much to elucidate the psychology of memory and modern systems have been founded on their teachings The mnemonic works of Loisette, W Walker Atkinson, Sharper-Knowlson and the systems known as the Pelman, the Concentro, and others are based upon the recognition of the fact that sound and legitimate memory depends on interest, observation, visualization, attention the use of the will in holding the attention concentrated on a narrow field of thought the careful discrimination of differences and similarities, orderly classification of thought and logical correlation of ideas, and that renewal of the impressions by frequent reviewing is essential to their retention in the memory Dr Johnson's dictum that "Memory is Attention" is only partly true The attention may be misdirected To be effective, it should be applied in holding before the mind's eye two notions and two only while critically noting their points of similarity, difference concurrence or other relationship In this way a passage of literature will be impressed upon the memory when we consciously break it down into its constituent parts and examine the nature of its thought and argument, the arrangement and order of its members, the tropes and illustrations the choice of special words and phrases and, by still further dissection the artful use of alliteration in the words, or the intentional collocation of pleasing vowel sounds Such a minute analysis compels the attention to be directed to every detail, and goes far to ensure a remembrance of the passage

Classification and order in the arrangement of the ideas are a necessity in logical memory As far as possible like should be classed with like and herein lies the need for thought in determining those points of similarity which enable likeness to be predicated

For use in public speaking, each leading idea or topic of the speech should be embodied in a suggestive word or phrase If these are printed or written in a bold hand and read over once or twice there should be no difficulty in remembering their order and recalling them while speaking The more logical the arrangement of the speech the easier will it be to remember A similar method may be applied to memorizing a speech listened to, but this task will prove more difficult than the former, as there is less time to dwell upon and analyse the separate ideas Recourse may be had in such a case to the artificial system of associating the leading ideas, as they come, with some series of known ideas which the listener is confident of being able to recall at pleasure Such known ideas may be a nursery alphabet, such as A was an Archer and so on, or such a rhyme as the Ram, the Bull, the Heavenly Twins. This device though puerile, may serve on occasion instead of the more intellectual method

A B.

MEN AND WOMEN, QUEEN SQUARE COLLEGE FOR.—(See WORKING MEN'S COLLEGE, THE.)

MENDEL, GREGOR JOHANN.—(See HEREDITY)

MENDICANT ORDERS DURING THE MIDDLE AGES, EDUCATION IN. — In education, as in other respects, the Mendicant Orders marked a wholly new departure from the monastic ideal "Monachus non docentis sed plangentis habet officium," in the well-known words of St Jerome (*q v*) It was not the duty of a monk as monk to teach or to learn, the question was whether it was not inconsistent with his profession to do either

The Dominicans were the first religious Order in the Christian Church to put intellectual work in the forefront of their activities 'Study" said the General Master, Humbert de Romans, "is necessary to preaching, preaching to the salvation of souls, which is the ultimate object" With this definite aim before them it was natural that the Friars Preachers should at first take a narrow view of education "In the books of the Gentiles and philosophers, to quote the earliest constitutions of the Order, "the friars shall not study, though they may occasionally look at them They shall not learn secular sciences nor the so-called liberal arts except by special dispensation of the Master or Chapter-General" They were restricted to theology, but the utmost stress was laid from the first on the importance of study No convent might be founded without a teacher, and church services were shortened "lest the friars be hindered in the study" Experience soon proved that theology could not be separated from other sciences, and, though the study of arts was not formally authorized by the General Chapter till 1259, it is certain that some if not all, of the twelve provinces into which the Order was divided, had established schools of arts many years before This is evident from decrees in provincial constitutions, and also from the career of Albert the Great Albertus Magnus, like his pupil Thomas Aquinas, entered the Order young, and at Cologne and Paris from 1244 onwards lectured on all the works of Aristotle The adoption by the Order as a whole of the more liberal conception of education was due primarily to the influence of the fifth Master-General, Humbert de Romans (1254–1263), who seems to have initiated the systematic organization of schools which characterized the Dominican Order While in every convent theological lectures were held which all the friars attended, special provision was made for the "fratres docibiles"—those who were reported by the visitors as likely to become teachers, and who were approved by the provincial chapters These were sent after two years in the Order, to a *studium artium* There were a number of *studia artium* or *studia logicalia* in each province (varying in Provence from six in 1275 to eleven in 1300), each school drawing its students from a group of convents The school was not fixed in one convent, but was moved from one convent to another The course lasted two or three years—the subject of study being logic The lecturers were appointed by the provincial prior and chapter for one, two, or three years, and reports were sent at first by the visitors and afterwards (from 1314) by the "Master of the students" to the provincial chapters on the subjects and manner of their lectures, and the number of disputations which they held In all schools,

special stress was laid on the recapitulation by the students of the lectures they had heard

A student who obtained a good report from his teacher in the arts school might then be sent by the chapter to the next grade of school—a *studium naturalium* In 1271 there were three such schools in the province of Provence which contained thirty convents Each of the three schools served ten convents and was moved annually from convent to convent in regular rotation Thirty years later the number of schools had increased to eight The number of students in a *studium naturalium* was normally six The course lasted three years and the subjects of study (chiefly the works of Aristotle other than the logical) are thus described in a decree of 1327 " In the first year the subject of the principal course shall be the Physics of the second course the Ethics and *De Caelo et Mundo* in the second year, (1) ' the book of Mathematics ' (2) the Ethics and ' Metric (Poetics ?) in the third year, (1) *Liber de anima de sensu et sensato de memoria et reminiscentia* (2) the Ethics and *de Generatione* " In some cases moral was separated from natural philosophy and taught in a special school The lecturers were appointed each year by the provincial chapters and were reported on like the lecturers in the *studia artium*

The third grade of school was the *studium theologiae* These schools of theology (or *studia solemnia*, as they were also called) were not peripatetic nor connected with a group of convents They were fixed in definite houses and were either " particular " or " general "—particular, if they drew their students from a single province general, if they drew their students from the whole Order A *studium generale* was usually established in connection with a university but not always Thus there was a Dominican *studium generale* at Cologne where both Albert the Great and Thomas Aquinas (*q v*) lectured, but no university At Bologna there was no theological faculty, but both the Dominicans and Franciscans had general schools of theology there, which later formed the nucleus of a theological faculty in the university A *studium generale* could also serve as a particular school for the province in which it was situated Thus while each province had the right to send one or two students a year to Oxford (which was the only place in England recognized as a *studium generale* within the Order), each of the four Visitations into which the English province was divided had the right to send one student to Oxford and to Cambridge to study for the degree of doctor of theology

The election of students for these higher schools of theology rested in the case of particular schools with the Visitations, in the case of general schools with the Provincial Chapter But in each case the selection had to be made from among the friars who had shown aptitude in the lower grades Thus to quote the statute of 1305 " No one shall be sent to a *studium generale* either in his province or elsewhere unless in the order above-mentioned he has made adequate progress in logic and natural philosophy and has attended lectures on the Sentences for two years in some *studium particulare* and unless the testimony of the lector, cursor, and master of the students gives good hope that he will be fit for the office of lector "

The appointment of teachers in *studia particularia* was in the hands of the provincial chapter subject to the proviso that a *lector principalis* must have studied in Paris or lectured on the Sentences in his own province The appointment of teachers in the *studia generalia* proved more troublesome The general principle was that one out of every three lecturers should be a foreigner, appointed by the general chapter—the native lecturers being selected by the Provincial Chapter But the whole matter was often delegated by the General Chapter to the Master of the Order, while the General Chapter claimed the right to override provincial appointments Thus national jealousies led to fierce constitutional struggles within the Order Where a general *studium* was also a university the position was further complicated by collisions between the regulations of the friars and the laws and customs of the university At Paris the secular master tried to exclude the Dominicans from university teaching with the result that the degrees of the Friar Doctors were withdrawn from the control of the university By the Papal Bull *Quasi lignum vitae* (1255) the Chancellor was directed to confer the licence to teach upon as many friars as he considered fit without consulting the rest of the theological faculty At Oxford difficulty first arose from a statute of the university that none should be admitted to a degree in theology unless he had taken a degree in arts A grace or dispensation was generally granted by the theological faculty, but this had to be unanimous and it was thus in the power of a single regent master to prevent a friar from proceeding to a theological degree, and the power was sometimes abused Eventually in 1314, after a bitter struggle a compromise was arrived at by which the grace could be refused only by a majority of the faculty, while the friars had complete control of the schools within their own house

Many experiments were tried in the selection of lecturers Thus sometimes the choice was entrusted to the friar masters of theology in the different universities For thirty years it was the custom for the students to vote on the retention or change of the lecturer this, however caused " disturbances " and was discontinued in 1309

Notwithstanding the universal prevalence of the dialectical method in the later Middle Ages all the Mendicant Orders continued to give much attention to Biblical exegesis Thus at Paris members of the Mendicant Orders before reading the Sentences had to lecture for two years on the Bible while seculars had to lecture only on one book of the Old and one book of the New Testament It is clear, however that during the fourteenth and fifteenth centuries much pressure on the part of the authorities was required to secure the due performance of these lectures (*e g Chart Univ Paris* IV, p 717)

The Franciscans The materials for the history of education among the Franciscans are far less complete than among the Dominicans While the series of General Constitutions are preserved from 1260 onwards, the Acts of the General Chapters have rarely survived, and the provincial records are scanty It would appear, however, that the central authorities of the Franciscan Order did not devote to education the constant attention which was given in the Dominican Order that the system was less complete and uniform, and that great varieties of development were exhibited in different provinces and different houses One result was a greater freedom of thought and teaching Alexander of Hales Roger Bacon (*q v*), Duns Scotus (*q v*), and William of Occam represent not only diverse, but in many respects antagonistic, points of view No

single teacher in the Franciscan Order acquired the oppressive intellectual predominance which was accorded to St Thomas Aquinas in the Dominican Order

St Francis relying on character and example, had little belief in education, and in his Rule (1223) warned friars "who are ignorant of letters, not to care to learn letters" His sole contribution to the scholastic development of the Order seems to have been to grant towards the end of his life a somewhat grudging authorization to St Anthony of Padua to teach theology to the friars St Anthony lectured partly in Bologna and partly as a peripatetic teacher in Northern Italy and Southern France Two definite events probably in 1231, started the Franciscan Order on its great career as one of the two "Student Orders"—the entry of Alexander of Hales then regent in theology at Paris and at the height of his fame, into the Franciscan Order, and the appointment of Robert Grosseteste, the foremost scholar of his age as lecturer to the Franciscans at Oxford The movement was vigorously supported by Elias Minister-General (1232–1239) who promoted the study of theology and appointed lecturers in many houses of friars

In England, where the educational system was more fully developed than in any other province, the merit of establishing it on a wide and permanent basis belongs to William of Nottingham, provincial minister from 1240 to 1254 He arranged for the maintenance of a regular series of students in the Universities of Oxford and Cambridge who should be sent as theological lecturers to all the houses of friars, and before his deposition such lectureships had been established in the great majority of the houses and nearly all the lecturers were qualified to hold "disputations" The lecturers were appointed for a year by the Provincial Chapter, generally on the recommendation of the friary concerned, and might be re elected All *fratres clerici* were bound to attend the lectures Later on, before 1336 an advanced school of theology, intermediate between the convent and the university, was founded in each of the seven custodies into which the English province was divided these schools were situated at London York Norwich Newcastle, Stamford, Coventry and Exeter To these schools apparently the more promising students of the custody were sent, and, in theory at any rate, lecturers in the Universities of Paris Oxford and Cambridge had to be chosen from men who had lectured on the Sentences at one of these or similar institutions Ten other of the thirty-four provinces into which the Order was divided possessed one or more of these schools, but nowhere were they so numerous as in England and nowhere else did the close connection between the school and the custody exist Bachelors to lecture on the Sentences at Paris had to be elected every third year from the province of France, and the remaining two years from the other cismontane and ultramontane provinces

At first theology was the only subject of study recognized in the Franciscan Order, and youths of 16 (like Salimbene) were set to study it immediately after their noviciate was ended It was not till 1292 that the General Chapter required the Ministers to establish schools of arts in their provinces for the instruction of young friars The difficulty however had been to some extent overcome in practice either by giving a very liberal interpretation to theology, or by instituting *studia artium* without authorization Thus, at Oxford, Grosseteste and his successor, Friar Adam Marsh, included Greek, mathematics, and physics in their courses (the famous encyclopaedia *De proprietatibus rerum* of Bartholomew the Englishman, who after lecturing on the Bible at Paris, became, in 1230 theological lecturer at Magdeburg, grew out of a commentary on obscure points in the Bible), and schools of philosophy were in full working order and had acquired popularity in the province of Aquitaine before the end of the thirteenth century Friars, when supplicating for theological degrees at Oxford, could refer to eight years' study of arts in schools of their Order as part of their qualifications The situation was fully accepted by the friars thus the General Chapter of 1421 decreed "Those only shall be chosen to take the degree of D D in the universities who have studied or lectured on arts and philosophy for seven years and on the four books of the Sentences for one year at least in the *studia generalia* of theology of some Order

Each of the thirty four provinces had the right to send two students to Paris free of charge, except that the province had to supply books Additional students might be sent on payment of £12 (Paris) for each Certain provinces had the right to send one or two students to Oxford and other universities these students had to be provided with clothes as well as books at the expense of their province The number of minorite students at Paris exceeded 140 in 1282 and there was accommodation for 214 at the beginning of the sixteenth century The numbers of friars of the four Orders at Oxford were, in 1317 Dominicans, 90, Franciscans, 84 Carmelites 45, Augustinians, 43 In 1377, Dominicans, 80 Franciscans, 103, Carmelites, 57, Augustinians 49

The Study of Languages. Reference should be made to the work of the two Mendicant Orders in the study of languages A knowledge of Greek, Hebrew and Arabic proved necessary (1) for missionary work among members of the "schismatic" Greek Church, Jews, and Saracens (2) for the understanding translation, and correction of the texts of the Old and New Testaments and the works of Aristotle and of his Arabian commentators The first *studium Arabicum* was established by the Dominicans in 1250 at Barcelona at the instigation of Fr Raymund de Pennaforte, originally for eight students Greek and Hebrew were subsequently added to the curriculum, and the school opened to students who were not members of the Dominican Order In 1310 the General Chapter recommended the establishment of three schools for Hebrew, Greek and Arabic, to each of which every province of the Order should have the right to send one student (the provinces then numbered eighteen) A *studium Arabicum* for the training of Franciscan missionaries was founded by Raymund Lull (*q v*) in the island of Majorca in 1275–1276 it accommodated thirteen students and had a permanent endowment Before this, in the interests primarily of theological and philosophical learning, Grosseteste and his immediate successors in the Franciscan school at Oxford encouraged the study of Greek, and Roger Bacon wrote Greek and Hebrew grammars for the instruction of students, and proposed to compile an Arabic grammar Bacon's recommendations, put forward in 1267, that provision should be made for the teaching of Greek Hebrew, Chaldaic, and Arabic, were adopted in 1312 by the

General Council of Vienne, which decreed the foundation of chairs for the teaching of these languages in the Roman Curia and at the Universities of Paris, Oxford, Bologna, and Salamanca

The Carmelites. The Carmelites followed somewhat later in the wake of the two student Orders Simon Stock, General Prior (1247–1265), founded houses in university towns—at Cambridge, Oxford, Paris, and Bologna—in the face of strong opposition from the conservative section of the Order, who wished to preserve its primitive characteristics in altered circumstances The General Constitutions of 1324 provided that one-tenth of the spiritual revenues of each province should be set aside for educational purposes, the first charge being for lecturers and students in universities, the remainder for students and lecturers within the province Eight *studia generalia* were recognized in the Order, namely, Paris Toulouse Bologna, Florence Montpellier, Cologne, London, and the Roman Curia It is remarkable that Oxford and Cambridge are not mentioned though in practice they were both treated as *studia generalia* the English province however, where the Carmelite educational system was more complete than elsewhere enjoyed a certain independence and special privileges Nine out of the fifteen provinces were bound to send one or two students to Paris and every province had the right to send two students to any *studium generale* Fixed salaries and exhibitions were prescribed for lecturers and students, these were paid partly by the province partly out of the common funds of the Order In every province the prior and chapter were bound to assign one or more places in which promising friars might be taught grammar, logic, philosophy, and theology The teachers of grammar were to receive no salary unless they held classes on every *dies legibilis* In spite of their connection with the East the Carmelite Order seems to have done nothing to promote the study of Oriental languages

The Austin Friars The Order of Austin Friars formed by the union of several congregations of hermits in 1256 obtained a settlement in Paris in 1259 The General Chapters emphasized the importance of study as tending to the exaltation of the Order In 1287 the first Austin Friar to take the degree of D D at Paris the celebrated Egidio Romano, was placed in relation to his Order in the position in which Thomas Aquinas had in 1286 been placed in the Dominican Order all students and lecturers were bound to study or lecture on his works and defend his views A more liberal decree was that passed in 1328 which insisted on students at Paris being sent to lectures outside the Order The Austin Friars were distinguished by their care of books and a remarkable decree of 1290 provided that every student at Paris before his return after five years' study should receive from his province £40 Tours for books, "that his studies should not be hindered for lack of books" The annual exhibition for Austin students at Paris at this time was £10 Tours

Each province had to maintain one student (but not more than two students) at Paris for five years At the end of this period the student from Paris was appointed lecturer in some other convent after examination A convent which paid a student's exhibition had the first claim on his services Students and lecturers for Paris or other *studia generalia* were chosen from friars who had been through a three years' course of logic and natural philosophy in a *studium particulare* each province was required to maintain one or two such schools. The lecturer on the Sentences at Paris was chosen each year alternately from the cismontane and ultramontane provinces The Order recognized as *studia generalia* in 1287 (besides Paris) the Roman Curia Bologna Padua, and Naples, but in 1321 it was ordered that every province should have one *studium generale* for the study of logic and the Sentences and in 1343 France was required to maintain four special schools of theology to relieve the pressure on Paris In 1355, in consequence of improper promotions elsewhere, the Pope declared Paris Oxford and Cambridge to be the only universities in which friars of the Order could obtain the degree of master The prevalent belief that the Austin Friars almost monopolized the teaching of grammar at Oxford rests on a misunderstanding of a statute of the University about 1492, which decreed that masters of the schools at the Austin Friars should henceforth receive the endowments assigned to the Masters of Grammar, and should be called Masters of Grammar These masters presided over certain exercises required for the degree of B A and held in the Austin Friary They were not friars and did not teach grammar

At the end of the fifteenth and beginning of the sixteenth centuries some houses of Austin Friars showed themselves unusually open to humanistic and reforming ideas This appears to have been due rather to the influence of some commanding individuals than to any special features in their educational history

The Influence of Friars Outside the Orders. The schools of the friars were intended primarily for members of the Mendicant Orders Consequently, the friars did not maintain grammar schools The Dominican statutes assume that novices already possessed this elementary instruction the Franciscan Order especially in early times admitted illiterates, but the rule discouraged those who were ignorant of letters from learning There are, however, instances on record of individual friars of both Orders attending the grammar schools of the towns in which the convents were situated But the educational advantages of the friars' theological schools were not confined to the members of the Orders The friars admitted and welcomed seculars to their lectures The Dominican Constitutions distinguish between public lectures to which seculars were admitted, and private lectures for friars of the Order The Franciscan Constitutions expressly exclude seculars from lectures on law and physics, and imply their presence at theological lectures Innocent IV granted licence for non-residence with the right to receive the full income of their benefices to any clerks of the province of Lyons who studied theology in Dominican and Franciscan houses at Dijon The Franciscan house at Bologna enjoyed similar privileges St Richard de Wyche, afterwards Bishop of Chichester studied theology in the Dominican house at Orleans The University of Paris in 1254 attributed the scarcity of theological students there to the fact that theology was now being taught by the friars in every city, and Roger Bacon bears testimony to the number and popularity of the new schools St Thomas Aquinas was justified in claiming that the decree of the Lateran Council of 1215, so far as it concerned the teaching of theology, had been carried out, and far more than carried out by the friars

Friars are often found acting as professors of

theology outside their own houses Thus a succession of Franciscans taught theology to the monks of Canterbury from 1275 to 1314, when some of the monks were declared qualified to undertake the office Similarly friars (Dominicans, Franciscans, Carmelites) filled the chairs of theology at various times in the cathedral (or chancellors') schools at Reims Lyons, Toulouse, York, London, Lincoln, and elsewhere Gregory XI, in 1377, ordered the provincial minister and chapter of England to put Cambridge Franciscans on an equality with Oxford Franciscans in the matter of appointments to lectureships in cathedral churches A. G L

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MENSURATION.—Except in technical courses, the subject of mensuration is seldom studied as a whole In the ordinary course, it appears chiefly in the form of interesting but scattered applications of arithmetic, plane and solid geometry, trigonometry and the calculus Most of the formulae employed can be readily proved, but, in a few cases, it may be convenient to assume the truth of a formula and to defer its proof until a later stage

Practical work in mensuration is most important Pupils should, if possible, make their own measurements, especially those of the dimensions of rectangular surfaces and solids, and of the bore, thickness and length of tubes, etc, in terms of both British and metric units They should be taught how, with the aid of the chain and cross-staff, to make the necessary measurements for determining the areas of fields

In arithmetic, the mensuration of rectangular surfaces and solids forms one of the most valuable parts of the subject To prove the fundamental formulae and to illustrate various problems, square-ruled paper and a number of equal cubes will be found useful Once the methods are understood, the examples should be made as practical as possible Under the heading of arithmetic may also be included questions on the areas of circles and circular rings, and the volumes of cylinders and tubes It should be shown roughly, by division into sectors, that the area of a circle is equal to that of a rectangle with dimensions equal to the radius and half the circumference of the circle

The most important theorems of elementary mensuration are to be found in plane and solid geometry and trigonometry The fundamental formula on the area of a triangle—that in terms of its base and altitude—leads, through the area of a trapezium, to the method of determining the area of a field The volume of the simpler solids may be found by several methods, but, in at least one or two cases (say, those of a right circular cone and sphere), the solid should be regarded as the limiting sum of a large number of very thin slices. The volumes of irregularly-shaped solids, such as embankments may often be determined, at the cost of a slight increase of arithmetical work, by expressing the solid as the sum of a rectangular parallelopiped, triangular prisms and pyramids

Considerable attention should be paid to Simpson's rules for determining the areas of curved surfaces and volumes of solids In the former case, the result may be checked by applying a tracing of the boundary to square ruled paper and counting the number of squares enclosed, or by means of the planimeter, the theory of which should be understood by the advanced student C DAVISON

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MENTAL DEFICIENCY ACT, 1913, THE, is complementary to the *Elementary Education (Defective and Epileptic Children) Act*, 1899, in its care of (*a*) children between 7 and 16 years of age who are not "educable", and (*b*) the mentally defective outside those age limits, whether "educable" or not It sets up a central Board of Control with county and borough councils as local authorities These local authorities *inter alia* must ascertain what persons within their area are defective, and provide suitable accommodation in special institutions or by other form of guardianship Interference with the powers and duties of education authorities is expressly excepted, so that the action of an education committee under the Act of 1899 will remain broadly as before, but with opportunity of report to a mental deficiency committee of cases that otherwise would be neglected, and particularly of those leaving educational (special) institutions at 16 years of age A. E L

MENTAL DEFECTIVES, THE AFTER-CARE OF.—Before the passing of the Mental Deficiency Act, 1913, practically the only systematic work carried out for defectives outside homes and institutions was the visiting, by voluntary after-care committees, of the children who had left the day special schools for the mentally defective There were, in 1913, some 171 such special schools (of which 93 were in London), with an average attendance of 10,913 children These after-care committees visited the children in their homes, endeavoured to secure their admission to institutions when necessary, and

assisted those capable of doing remunerative work to get employment

The returns of these committees show that the children leaving special schools fall roughly into three divisions—

1 The high grade feeble minded children These are often capable of good work, but of these even only a small percentage obtain permanent employment and earn enough to keep themselves

2 The children who are unfit to be wage-earners, but who, for a time can be cared for in their own homes, eventually they are, however, sure to need institution care

3 The children who from their low mental condition or their miserable family circumstances, drift about from workhouse to prison, from rescue home or refuge back to workhouse and prison, and for whom nothing can be done outside an institution where they can be detained

The children in groups (2) and (3) will generally be dealt with by the local authorities under the Mental Deficiency Act, either by sending them to institutions or by supervising (visiting) them in their own homes Children in group (1) will usually remain dependent on voluntary help for assistance and guidance

The system of after care is extending, and voluntary associations are being formed (by local authorities and by the Central Association for the Care of the Mentally Defective) to secure a friendly visitor for all defectives living at home Such associations receive grants from the county and county borough councils and from the Board of Control

Good visitors cannot give a defective self control or judgment nor can they safeguard him adequately, but they can assist both him and his family Plain common sense advice as to treatment, suggestions for simple and homely occupations advice on the urgent necessity of keeping the defective under constant supervision, assistance in finding work or intervention in the numerous difficulties which arise with employers are all of value

Above all if the defective becomes unmanageable and is in great moral danger the facts can at once be reported to the proper authorities, and action can be taken to safeguard the defective *before* disaster rather than *after*

It is hoped that the care of the "unfit" may gradually be extended all over the country and that it will be of real assistance in coping with one of the most serious racial problems our nation has to face E T

MENTAL HYGIENE OF THE CHILD, THE — The essential feature in the mental hygiene of childhood is to cultivate a power of inhibition and of adaptation to environment which will prove a stable foundation for character without giving rise to any conscious or unconscious strain which might have injurious after effects A sound character can only be obtained with a well developed brain acting in a healthy body While the physical basis is inherited much of character is acquired and children tend to respond like those who had charge of them in early years If guardians are calm so are the children if they are emotional the children will be emotional

The earliest elements of the nervous system are concerned with such reflex or automatic functions as the circulation, the action of the viscera and the like, which, in large measure, become functional before birth, are almost unattended by consciousness, and can only be educated indirectly A readily-controlled circulation is essential for mental health, since it is through the lymph and blood streams that the products of cell action are removed, which produce fatigue and, if not dealt with quickly, injure the nerve cells The lymph circulation is particularly promoted by muscular movements, hence the value to infants of exercise taken in sharp bursts alternating with short rests No child in the infant school should be kept sitting still for more than a quarter of an hour at a time

The nerve elements which control the mechanisms of co-ordinated muscular movements need conscious, willed attention in their earlier stages but later are automatic The earlier in life all balance movements are acquired, the easier is the process and the greater the proficiency attained In the first stages of instruction the movements should be limited to the larger joints, and fine movements of the hands and fingers should not be attempted too early

In the highest levels of the nervous system, the various associations of sensation and movement are elaborated, and lines of response to stimuli become organized, giving rise to such aptitudes as writing, music manual dexterity, or linguistic expression, or to those predetermined reactions to mental or moral stimuli called habits

As control over movements is facilitated by the invariable nature of the response to all failures so in the training of character the rules must be absolute since any variation will allow fresh channels of association and undo the work of months By habituation an action at first distasteful may become pleasurable The attention cannot be held for long in any one direction hence lessons should be short and varied so as to bring fresh groups of cells into action and to throw the greater stress on the more mature systems Parents should bear in mind the possibility of overworking children especially girls, by demands that they render assistance in housework and practise music as well as do homework This is important in connection with the award of scholarships to elementary school children since if quiet and privacy for home study cannot be obtained it were usually better for the pupil not to receive a scholarship From the standpoint of hygiene there is much to favour the substitution of "preparation" under suitable conditions in school for homework

Nervous and Emotional Control. Pressure helps to produce nervous exhaustion particularly in those prone to worry The chief symptoms of minor nervous strain are increased irritability, restless movements and diminished emotional control Children thus affected usually start the day brightly but rapidly fall off, they are very sensitive to bright lights or loud sounds and are unduly apprehensive of pain Those whose emotions are but little restrained are less likely to suffer, as their condition rapidly becomes obvious but those of the restrained type may suffer in silence, although the struggle set up between the emotional content of their mind and their strong powers of inhibition may form the basis of a subsequent nervous breakdown The power of control has to be trained so that the primitive instincts and emotions may be subordinated to the common rule with as little conflict as possible, or sublimated by diversion to more intellectual activities Emotional trouble is perhaps more frequent in precocious children, who find the usual games do not entirely meet their need for

physical relaxation, and who are often more helped by the varied activities associated with the Boy Scout Movement (*q v*)

Nervous instability may manifest itself in the forms of tremors, chorea, or even epilepsy Children thus affected should not continue in ordinary education without medical advice Special schools, at which treatment and education are combined, are available for epileptics of normal or nearly normal mentality between the ages of 7 and 12 at the time of admission, and there are private schools which meet most requirements

Subnormal Children. Any child who proves unable to do ordinary school work under favourable conditions is certainly subnormal, the deficiency either affecting the general intelligence or being limited to some special ability, as number or language In agreement with the order of their racial appearance, the auditory associations of language long exert more effect than the visual associations Ability to write, therefore, is more variable than skill in reading while a failure in the latter implies much less defect than does the inability of any one not deaf to understand spoken language Deafness from early life leads to deeper mental deficiency than does blindness The specificity of aptitudes is important in that some only are essential to education in ordinary schools Thus the child who cannot draw, or who is tune- if not tone-deaf, may pass through life unnoticed, while modern education by postulating a certain proficiency in reading writing and calculation, forces those children who are partially word blind or weak in number to be educated specially Many subnormal children are merely dull or backward and need education in " repeater ' classes with perhaps less stress on bookwork and more on manual training Such children may be distinguished from the feeble-minded in that they are proficient at some school subject that interests them—at manual work or at games All subnormal children should be medically examined since the ill health arising from anaemia constipation, decayed teeth and other causes of chronic poisoning as well as some defects of the ductless glands exerts an injurious influence on the nervous system and may produce mental dullness To place children with limited defects in schools for the mentally defective (*q v*) would inflict harm on their future were it not realized that such defects may cause the need for special educational methods, but in no wise postulate feebleness of mind or need for care and control in after life

True mental deficiency consists in a failure of the brain to undergo full development, whether as a result of some injury, or from influences of a congenital or hereditary character The truly mentally defective child may be improved but never rendered normal Generally speaking most can be obtained by returning as far as possible to primitive interests

F C S

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MENTALLY DEFECTIVE CHILDREN FROM THE LEGAL AND ADMINISTRATIVE POINT OF VIEW.—The Acts which concern mentally defective children are the Elementary Education (Defective and Epileptic Children) Acts, 1899 and 1914 and the Mental Deficiency Act, 1913 (*q v*) For the purposes of these Acts, the term " children " does not include any one below the age of 7 years or above 16 The lines of demarcation between the first two Acts and the third should be kept clear and distinct, and the definitions closely observed A child may be certified as mentally defective within the meaning of the Elementary Education (Defective and Epileptic Children) Acts, or under the Mental Deficiency Act In the former case, the child is regarded as educable (in a certified special school or class), in the latter case, he is not In the former case, he is under the care of the local education authority, but not in the latter The administration of the Elementary Education (Defective and Epileptic Children) Acts is in the hands of the local education authority whose duty it is to provide suitable schools for children who—

> " not being idiots or imbeciles, and not merely dull and backward, are defective, that is to say, they—by reason of mental defect—are incapable of receiving proper benefit from the instruction in the ordinary public elementary schools, but are not incapable—by reason of such defect—of receiving benefit from instruction in special schools or classes "

The Establishment of Schools and Classes. The Act of 1899 gave *power* to education authorities to provide and maintain such certified special schools or classes if they thought fit, but the comparatively heavy cost, the lack of any provision for the care and control of the mentally defective over 16 years of age, and, in the smaller towns and rural districts, the small aggregate number of defective children for whom such facilities were desirable, led many education authorities to decline to adopt the Act Larger grants, the passing of the Mental Deficiency Act 1913, the power given to local education authorities to combine for the purposes of the Elementary Education (Defective and Epileptic Children) Acts and the further power given to a non county borough or urban district education authority, by agreement with the county education authority and with the approval of the Board of Education to delegate its powers and duties to the county education authority have removed many of the objections and now by the 1914 Act, the provision of certified special schools or classes for mentally defective children is compulsory upon local education authorities The proviso is made that the obligation of the local education authority shall not include—

(i) A duty to make provision for boarding and lodging a mentally defective child, unless the Board of Education are satisfied that suitable provision for the child s education cannot be made in any other way and unless the grants payable out of moneys provided by Parliament in respect of a mentally defective child, so boarded and lodged, amount to not less than one-half of the cost of conveying such child to and from any school so provided, and of educating, boarding, lodging, and medically attending that child (including, in the case of a school provided by a local education authority, expenditure out of income by the authority by way of interest on, or repayment of, capital raised, or by way of rent or other similar payment, for the purposes of the provision of the school) or—

(ii) A duty to establish a certified school for boarding and lodging mentally defective children, unless the Board of Education are satisfied that there are not less than forty-five such children belonging to the area for whose education suitable provision cannot be made in any other way

The position of the child can, therefore, now be

expressed in this way Every child who is educable in any degree whatever must have suitable educational facilities provided for him—in the ordinary public elementary school if he is capable of deriving proper benefit from the instruction given therein but, if not, then in a certified special school or class, and it is only in the case of a child—

(*a*) Who is incapable by reason of mental defect of receiving (i) benefit or (ii) further benefit in a certified special school or class or—

(*b*) Who cannot be instructed in a special school or class without detriment to the interests of the other children, or—

(*c*) As regards whom the Board of Education certify that there are special circumstances which render it desirable that he should be dealt with under this Act by way of supervision or guardianship—

that the local education authority can hand over all responsibility for the child to the local authority under the Mental Deficiency Act 1913

It will be noted that while an education authority can be compelled to make suitable provision for educating in a certified special school or class the mentally defective child of any parent who so desires the *power* given by the 1899 Act to convey board, lodge and medically attend as well as educate such child still largely remains a *power* and does not wholly become a *duty* that is to say it is not *compulsory*, unless the Board of Education decide that suitable provision for the child's education is not possible in any other way and the Parliamentary grant is at least one-half of the total cost Further the *power* conferred by the same Act to establish and maintain a certified special school for boarding and lodging mentally defective children does not become a *duty* unless there are at least forty five such children in any given area and not then unless the Board of Education are satisfied that there is no other way of making suitable provision for their education

The authority is empowered further to discontinue the maintenance of a certified special school or class which for the previous three years has had an average attendance of less than fifteen, but it must at the same time make such alternative provision as the Board of Education may approve

The Rights and Obligations of Parents. If a parent refuses to recognize his child s defectiveness, and the local education authority is satisfied that he is not making suitable educational provision for him the authority may apply to a court of summary jurisdiction for an order requiring the child to be sent to a suitable certified special school or class willing to receive him Failing a satisfactory selection made by the parent the court decides on the school or class, but it must not be out of the reach of the child's residence or a boarding school, without the parent's written consent The child need not attend the certified special school if the parent can satisfy the local education authority that he is making suitable provision for his education in some other way

If the education authority fails to convince the court of the necessity for an order, the latter may award costs to the parent as compensation for the expense, trouble, and loss of time incidental to his attendance at the court

Non-compliance with an attendance order does not now involve the child's committal to an industrial school

Appeals against certification as mentally defective within the meaning of the Elementary Education (Defective and Epileptic Children) Acts may be made to the Board of Education A further medical examination to ascertain if the child is still certifiable can be demanded six months after the last examination

In the case of a mentally defective child whose home circumstances are so unsuitable that the child may be regarded as neglected, abandoned, without visible means of support or cruelly treated the course open is to notify the Board of Education and if the Board certify that circumstances render it desirable for the child to come under supervision, the local education authority will be instructed to notify the local authority under the Mental Deficiency Act 1913

An enforceable order can then be obtained from a judicial authority to place the child under supervision or guardianship This does not necessarily remove the child from the special school, nor does it relieve the local education authority of its responsibility for the child's education

Idiots, Imbeciles, and the Feeble-minded. There remains the child who is so defective as to be beyond the scope of the Elementary Education (Defective and Epileptic Children) Acts He will fall under one of the categories defined by the Mental Deficiency Act 1913, viz —

(*a*) Idiots persons so defective in mind from birth or from an early age as to be unable to guard themselves against common physical dangers

(*b*) Imbeciles persons in whom there exists from birth or from an early age, defectiveness not amounting to idiocy, yet so pronounced that they are incapable of managing themselves or their affairs or if children, of being taught to do so

(*c*) Feeble-minded persons persons in whom there exists from birth or from an early age mental defectiveness not amounting to imbecility, yet so pronounced that if children they appear permanently incapable of receiving benefit from ordinary school instruction,

(*d*) Moral imbeciles persons who from an early age display some permanent mental defect coupled with strong vicious or criminal propensities on which punishment has little or no deterrent effect

The first two classes are obviously ineducable, and are, for that reason expressly excluded from the provisions of the Elementary Education (Defective and Epileptic Children) Acts, but, in the case of the last two classes, it can only be said that they are unimprovable after some attempt at education has been made without success The first two classes at once and the second two classes after proof of ineducability are suitable for certification under the Mental Deficiency Act Defectives under this Act may be dealt with by being sent to a State institution, a certified institution, a certified house, or an approved home, or by being placed under guardianship

The parents or guardians may desire such a course to be followed, or they may object to it, or the child may be found abandoned, etc In the last case the procedure is simple An officer of the local education authority or a police constable, may take the child to a place of safety, where he will be detained until after notification by the local education authority, a petition can be presented to a judicial authority according to the form prescribed in the Act An order will then be made unless the parent or guardian appears and proves to the satisfaction of the judicial authority that he

is both able and willing to make suitable provision for the care of the defective child

Thus the parent who does not wish his defective child to be dealt with under the Mental Deficiency Act, has simply to make such provision for the care and control of the child as would be deemed satisfactory by the judicial authority

We come now to the child whose parents or guardians wish to take advantage of the Mental Deficiency Act. Again the procedure is simple The parent or guardian may request the local education authority to notify the name and address of the defective child to the local authority under the Mental Deficiency Act, whose duty it will then be to present a petition in the prescribed form

In all cases where an order is made for a mentally defective child to be sent to an institution, the parent, or other person liable to maintain the child, may be ordered by the judicial authority to contribute such a sum towards his maintenance, or, in the event of his death, towards his funeral expenses and any charges incidental thereto as, having regard to the ability of the person liable to maintain him seems reasonable This order may be enforced against the property of the person liable, if made by a judge of county courts, and, if made by any other judicial authority as if it were an order for the payment of a civil debt made by a court of summary jurisdiction

The local authority for the purpose of the Mental Deficiency Act is the County or County Borough Council who are responsible to a central authority known as the Board of Control J HUDSON

MENTALLY DEFECTIVE CHILDREN, THE EDUCATION OF.—(See PHYSICALLY AND MENTALLY DEFECTIVE CHILDREN, THE EDUCATION OF)

MENTALLY DEFICIENT CHILDREN.—The problem of the feeble-minded has been much in evidence in its educational, social, and eugenic aspects during recent years, and in this article it is proposed more especially to deal with the medical view of what may be designated the juvenile aspect of the question An experienced worker in the management of mentally defective children has pithily summed up our duty towards this afflicted class in the four words *Detect early protect always*, and we venture to take this apophthegm as the text of our remarks

Some will say "What need to *detect?* Is not the existence of mental defect in a child a self-evident fact?" Undoubtedly, in many cases, especially those of low grade, this is so, yet there are many in which skilled diagnosis must be applied to distinguish between inborn, and therefore presumably permanent, mental infirmity and that depending on physical weakness, unfavourable environment, or parental neglect It is remarkable how rarely parents recognize original defect in their own offspring, even when obvious to those outside the family Even when recognized, parents are apt to hug the hope that all will come right when the child is older, it may be at the mystic age of 7! Too often this expectation is not fulfilled, and at length the disappointed parent takes the child to a "specialist," who has made a study of such cases

Diagnosis. What are the principles on which he proceeds in forming his opinion of the mental condition of the little patient?

1 PHYSICAL SIGNS First, he takes a general survey of the case, noting the child's aspect and expression, the shape and size of his head, the physical development as compared with that normal for the age, and observing whether or not there are anomalies of face or feature, the condition of the special sense organs, the powers of speech and of response The development and use of the limbs is scrutinized, as also the attitude and gait The formation of the hand, the finger movements, and the power of grasp and of manipulation generally, will often furnish serviceable indications. Twitches and tricks are specially noticed, and it will be seen if the mouth is kept properly closed or if saliva escapes from flaccid lips Further, the throat should be examined externally as to abnormality of glands and internally as to tonsils and indications of adenoids The form of the palate, the size and markings of the tongue, and the condition of the teeth should be also noted.

2 MENTAL SIGNS Next comes the scrutiny of the child's intellectual powers Can he use only single words, or string them together into sentences? When asked questions does he merely repeat them or reiterate the last few words only, like an echo? Can he point to his eyes, ears, nose, mouth, etc., when requested to do so? Can he count his fingers and the buttons on his suit? Can he add 3 and 2, 7 and 4 or subtract 3 from 5 either with, or without objects to guide him? Can he correctly accomplish the tests arranged by Binet and Simon as appropriate to his age, and if not to what lower age standard do his accomplishments correspond? If he has attended school, what is the extent of his attainments and what his powers of attention and of response? Is he fairly docile, or lacking in obedience and self-control?

3 PARENTAL EVIDENCE Next comes the parents' turn for interrogation, and much tact and care in questioning is needed to elicit relevant and reliable information Did anything unusual happen to the mother before or at the child's birth? Was there a difficulty in getting the child to breathe when born, and were there any fits in the first weeks, during teething, or subsequently? What infantile ailments has he had? When did he begin to walk and to talk? Are the habits cleanly now, and, if so, at what age did they become so? Is the disposition placid, irritable, or mischievous? Can the child feed himself, or do anything in the way of taking off or putting on his clothes? Does he sleep well or otherwise? When did the parents first notice peculiarities?

The medical examiner having gathered these particulars, and such others as regards the family history as the parents will vouchsafe in relation to nervous or mental troubles affecting the pedigree, considers the facts which will enable him to form a diagnosis

Physical Anomalies. He takes into account the physical as well as the mental characteristics observed, and is aided by the personal and family history, so far as ascertained In some cases it will be easy to recognize original (*i e* congenital) defect, certain physical anomalies helping him to do so Space permits us only to report a few of these, but amongst the more marked are the following—

1 MICROCEPHALY The name given to small-headed cases At 5 years of age, the average cranial circumference in normal children is about 20 in., in microcephalics it may be not more than 15, the brain weighing less than one-third of what would be normal

2 MACROCEPHALY A term applied to those

with abnormally large heads, including cases of congenital hydrocephalus, with globular skulls measuring 24 or 25 in in circumference, or more

3 MONGOLISM A term applied to certain European children who come into the world bearing so marked a physiognomical resemblance to the Far Eastern races, that they are commonly described as of the "Mongolian type"

4 CRETINISM Due to deficiency of thyroid gland These remarkable cases, practically dwarfs both in body and mind improve marvellously under the administration of the thyroid gland of the sheep

5 NEUROTIC FROM BIRTH In this type restlessness is the characteristic, with face and finger twitches, and a marked lack of power of attention and self control, with gusts of temper ("nerve storms") etc

6 PARALYTIC cases, often resulting from cranial injuries at birth, affecting motor centres

Other Factors. The above must serve as a list (necessarily very imperfect) of some of the outstanding examples of correlated physical and mental defect, but in many other cases—indeed the majority—such striking abnormalities are not found The medical examiner needs to fall back upon his knowledge of disease, more especially of the cerebral lesions left by meningitis and other inflammatory attacks in infancy, to aid his diagnosis Acute hydrocephalus, epilepsy, and accidental injuries to the head are amongst the causes which interfere with the proper development of brain cells and consequent due evolution of intelligence Family history is of value in this connection as neuropathic heredity is the most potent cause of nervous instability in children

Classification and After-Care By careful consideration of mental and physical signs and of the family history each case may be classified according to the degree of deficiency displayed either as (*a*) an *idiot* (*b*) an *imbecile* or (*c*) as simply *feeble minded* It is fairly obvious that *idiots* who (as defined in the Mental Deficiency Act) are "unable to guard themselves against common physical dangers, and *imbeciles* who are "incapable of managing themselves or their affairs or of being taught to do so" require life-long protection *Feeble minded* children who have proved to be "permanently incapable of receiving proper benefit in ordinary schools from the instruction" also require "care, supervision, and control for their own protection, or the protection of others and although the training received in special schools may do much for their improvement rendering a fair proportion comparatively useful it cannot put into those who are the subjects of original defect that *savoir faire* which Nature has left out of their constitution Some form of after care is therefore essential for these also, in the interests of the race they must be protected particularly from the responsibilities of parenthood

Limitations of space prevent the discussion here of the "Moral Imbecile but reference is made to this type under the head of Moral Perversion in the article on "Insanity in Children"

G E S

MERCANTILE MARINE, TRAINING FOR THE —If a boy wants to go to sea and aspires to become an officer, he has to study for the position In other departments, such as petty officers or seamen no examination is necessary These two classes include stewards, cooks, etc, in the catering department, and all branches of seamen, firemen and trimmers Every boy who wishes to become a navigating officer should undergo the sight test before he takes any other steps He can be tested at the Local Marine Board Office, of which there is one at every considerable port The fee is only a shilling or two The object is to ascertain whether the candidate is colour blind If he is, he must give up all idea of becoming a navigating officer Every boy who wishes to become a navigating officer must undergo four years' sea training before sitting for his examination as second mate After another year at sea, he sits for his examination as first mate, and after another year he sits for his examination as master At any time that he likes afterwards he sits for his examination as extra master, which is optional, and is the last and highest examination he has to undergo He must pass the sight test at his second mate s examination and at the subsequent examinations also It is simple enough he has only to be able to distinguish between red and green flags and lights and, in what is known as the form test to be able to distinguish certain letters on a large sheet of cardboard at a distance of a few feet Neither the colour nor form test presents the least difficulty to anyone whose eyes are normal The candidate should abstain from cigarettes for at least a month before going up for the test, for smoking affects the sight he should also be careful what he eats for a disordered stomach upsets the sight as well

Training Ships Boys of good social position who can afford the fees should join one of the training ships suited to their class These vessels are the *Conway* stationed in the Mersey near Liverpool and the *Worcester*, in the Thames off Greenhithe The fees on the *Worcester* are £100, per annum including uniform and on the *Conway* not under £99 a year no uniform being supplied For these sums the pupil is well fed and housed besides being taught everything he is likely to need to obtain a first class start in his profession The outfit is extra and there are a few other expenses Boys from 14 to 16 are taken, though the rule may be stretched if a boy who is otherwise suitable is a few months over this age limit Messrs Devitt & Moore s Ocean Training Ships, Ltd have now instead of training ships the Nautical College Pangbourne, opened in November, 1917 It has accommodation for about 200 pupils or cadets who must at age of entry, be between 13 years and 4 months and 14 years and 4 months, and their parents must be natural born British subjects The course at the college extends over three years followed by one year at sea in the training ship *St George* and the late Lord Brassey's famous auxiliary steam yacht *Sunbeam* The time spent at the college counts up to 12 months of the sea service required by the Board of Trade regulations The fees for the college and for the first voyage in the training ship are at the rate of £160 a year All these establishments are stepping-stones to the chief liner companies many of which have special arrangements with them also appointments are granted from them by the Admiralty to the Royal Naval Reserve Two years spent on either the *Conway* or *Worcester*, which is the time the training is expected to last, counts as one year towards the four the would-be officer has to spend at sea before he can go up for his

examination for second mate If a boy desires to go to sea at once, he can have a good training, combined with actual sea experience by obtaining a berth as apprentice with one of the shipping companies that specialize in sea-going training For all these vessels the passing of the sight test is compulsory before the pupil is accepted

For boys who are less well off financially, there is the excellent training-ship *Indefatigable*, moored in the Mersey which affords, for very moderate fees, a first-class training in every way for boys who desire to become officers in the Mercantile Marine, and also for those who simply wish to become able-bodied seamen for the former it gives every assistance in its power by finding them ships on which to complete their preliminary training

Care should be taken that in the apprenticeship agreement it is stipulated that the boy shall be taught seamanship, navigation, and nautical astronomy thoroughly, and that his consecutive four years' training shall be on a suitable vessel Some shipowners are willing to forego the premium often charged to apprentices

Before the Mast Boys whose families are unable to pay the fees of the school-ships are by no means debarred from going to sea, the way is as easy for them as for the others The *Warspite* training ship belonging to the Marine Society, of Clark's Place, Bishopsgate E C 2 receives boys who can pay no fees whatever, and supplies everything from the start, and clothes and trains them thoroughly before sending them to a ship The boys from the *Warspite* are divided about equally between the Navy and the Merchant Service Should a boy show a desire to become an officer he is helped in his studies in every way possible during his period of training on the ship The Shipping Federation St Mary Axe London, E C 3 also has a scheme for taking boys Hundreds of boys who have gone to sea in this manner have risen to the top of their profession There is still a class of boys who want to go to sea as ships' boys and work their way up though it is just as easy for them to go as apprentices without premiums Their best plan is to apply first in writing and after in company with a responsible relative to a shipowner or application may be made to the captain on board, and if he thinks the boy will suit he may direct him to attend with his parent or guardian at the offices of the Local Marine Board when the crew are being signed on A boy going before the mast generally gets little pay for his first voyage but after a voyage or two he should be classed as an O S and for his next voyage if old enough, as an A B

Sailing and Steam Vessels. Under present Board of Trade rules it is advisable for everyone intending to become an officer to gain his early experience under sail, if he is able He can transfer to steam afterwards if he likes But there are now so few sailing vessels on which a satisfactory training may be had that many youths are starting in steam vessels, and thus saving time and gaining steam experience earlier The Board of Trade issued in May, 1920, a list of sailing ship and steamship owners who take apprentices, of whom the great majority are steamship owners

A sailing-ship training is regarded by the Board of Trade as more thorough than that in steam only Certificates are issued for sail and steam, and for steam only

Boys going as apprentices will learn from the owners what they will need (See also MARINE ENGINEERS, HOW TO BECOME A, and SHIP'S STEWARD, HOW TO BECOME A) R A F

MERCERS' SCHOOL.—(See LONDON CITY COMPANIES AND EDUCATION, THE)

MERCHANT COMPANY SCHOOLS (EDINBURGH), THE.—The Company of Merchants of the City of Edinburgh, established 1681 maintains four schools **Edinburgh Ladies' College** (900 pupils), **George Watson's Ladies' College** (900) **George Watson's College for Boys** (1,200), **Daniel Stewart's College** (500)

Before 1909 the schools were administered under a number of trusts The Merchant Maiden Hospital, founded 1695, with an original capital of £2,100, George Watson's Hospital (1723), with an endowment of £12,000, George Grindlay's Endowment (1801) with property worth £25,000, and Daniel Stewart's Hospital (1814), with a capital of £13,000 A fifth school, James Gillespie's, was carried on by the Company for primary pupils, with latterly a higher grade section until July, 1908, when the management was transferred to the Edinburgh School Board In 1909, when the trusts were consolidated under The Merchant Company Education Board, the total capital had grown to over £650,000

For many years the beneficiaries of the trusts were educated and boarded at the hospitals, but in 1870 the schools became public secondary schools, with day pupils retaining however, about seventy places for foundationers who receive from £30 to £40 each as an annual maintenance allowance There are also open for competition among the pupils about 100 scholarships conferring free education 70 bursaries giving free education with a small money grant, and 24 higher bursaries of £20 annually for four years tenable at a university or other higher institution

All the schools are organized in three divisions the *Preparatory* leading to the "Qualifying" Examination of the Scottish Education Department about the age of 12 the *Intermediate* to the Intermediate Certificate at 15 or 16, and the *Post-Intermediate* to the Leaving Certificate, or entrance to a university, about two years later The schools are chiefly classical but there are Modern sides, and in the girls schools special attention is given to domestic science and to preparation for business life

Playing fields are provided for the Ladies' Colleges at Falconhall for Daniel Stewart's at Inverleith, and for George Watson s at Myreside In connection with Daniel Stewart's College there is a company of the 1st Highland Cadet Battalion, Royal Scots, and with George Watson's Boys' College a contingent of the Officers' Training Corps

The bond between present and former pupils is maintained in the schools by the publication (three times a year) of *The Watsonian*, *The Merchant Maiden*, *Stewart's College Magazine*, and *The George Square Chronicle* and also by the formation of former pupils' clubs Of these clubs, the most widespread is that in connection with George Watson's Boys' College, which has branches in London, Liverpool, India, New Zealand, Australia South Africa, South America, United States, Canada, China, and Ceylon

MERCHANT TAYLORS' SCHOOL.—This school was opened in September, 1561, by the Worshipful Company of Merchant Taylors, and is governed

by the master, wardens, and court of assistants of the Company It is one of the nine great public schools of England The first buildings were in Suffolk Lane, in the parish of St Lawrence Poulteney, and, being destroyed in the Great Fire of 1666, were rebuilt on the same site in 1675 There the school continued strictly limited to 250 until 1875, when it was removed to Charterhouse Square and established in new buildings erected at a cost of £30 000 on land bought for £90 000 some years previously from the governors of the Charterhouse, after they had determined to remove their own school to the country The new premises allowed the numbers to be increased to 500 The school was originally modelled on St Paul s, and Richard Mulcaster, the Grecian and Orientalist, was the first head master

Sir Thomas White, founder of St John's, Oxford, linked the school to his college by establishing leaving scholarships to carry boys through the university, besides a large number of fellowships at St John's, tenable only by O M T 's The prizes, scholarships and exhibitions open to boys at the school are very numerous and of great value and the fees charged are small Entrance to the school is obtained chiefly by the nomination of some member of the Court of Assistants of the Company, but there are other ways of gaining admission, thus, entrance scholarships are open to all comers There are three sides—classical modern, and special (mathematics and science)—and boys intending to study medicine may shorten the regular medical course by six months by doing their chemistry, physics and biology at school The study of Hebrew is encouraged no doubt owing, in the first instance, to Mulcaster, and the Hebrew prizes at the universities frequently fall to old scholars The work of the school reaches a high standard, and the annual Honours List includes distinctions at the universities not only in classics but also in mathematics science history modern languages and Hebrew Among famous pupils have been the poets Spenser and Shirley, Clive, the founder of our Indian Empire Archbishop Juxon and Bishop Lancelot Andrewes, the infamous name of Titus Oates also appears on the register of scholars

MERCHISTON CASTLE SCHOOL, EDINBURGH.—This first grade public proprietary school was opened as a private school in 1833 It achieved so great a success under Dr Rogerson and developed such a character of its own, that in 1896 a committee of Merchistonians resolved to form a company to prevent the possibility of its extinction considering that its sterling manly traditions should be made permanent There are now upwards of 300 boys in the school and about twenty-five masters, the Big School has the usual divisions—classical, scientific, general, Army, and commercial, and there is a separate Junior School preparatory to the main establishment Merchiston Castle was the ancient fortalice of the Napier family, and there John Napier (1550–1617) invented logarithms Besides the Castle there are four boarding-houses for the School—Castle Bank Castle Gate, Blantyre, and Mardale—and two—Merchiston House and Merchiston Lodge—for the Juniors The Sanatorium, called the Grange, has accommodation for twenty The playing-field is about 13 acres in extent Physical training is a prominent feature of the system, football (Rugby) is cultivated to perfection. some boys have even gained International honours while still at school The Cadet Corps (O T C) wear the Grant tartan There are two or three entrance scholarships of £20 and a leaving Rogerson Scholarship of £45 tenable at Oxford or Cambridge for three years

MEREDITH, GEORGE.—In education, as in other branches of ethics, modern novelists have contributed to progress by a criticism of current methods No writer brought keener and more revolutionary views to the subject in Victorian England than George Meredith. His first novel was an overt criticism on the avoidance of public schools Richard Feverel is not allowed to go to school by his father, he is educated at home on a pre-conceived system, which exalts the paternal influence over school and college alike—with disastrous results It was not till nearly forty years later in 1893–1894 that Meredith returned definitely to the subject in *Lord Ormont and His Aminta* The hero of this novel is a schoolmaster and the novelist ventilates some of his own views on education in the course of the book One is the use of education for cosmopolitan ends the profit of educating together children of different nationalities Meredith himself had been educated abroad, and he insisted on the advantage of bringing boys and girls together at their formative period before insularity had stiffened them into prejudices Together with this he advocated strongly co-education and he was a pioneer in the higher education of women

These projects sprang from his antipathy to the provincialism of the English character and from his faith in brain for women as well as for men He had no doctrinaire objection to public schools the main count against them in his judgment, was that they tended to foster class-feeling But he wished to see schools of this new kind springing up

In the same way his conception of the schoolmaster was determined largely by his ideals of human nature The predominant quality is faith in human nature with a capacity to work for ends as yet unseen or only partly seen He notes the "hardest of the schoolmaster's tasks—bright winter thoughts prescribing to him satisfaction with a faith in the sowing which may be his only reaping Away fly the boys in sheaves After his toil with them to instruct restrain, animate, point their minds they leave him, they plunge into the world and are gone Will he see them again ? It is a flickering perhaps To sustain his belief that he has done serviceable work he must be sure of his having charged them with good matter How can the man do it, if during his term of apprenticeship, he has allowed himself to dally here and there ?" One of the recurring notes of Meredith's ethic is this that you must have faith in the ideal and aim of your vocation if you are to contribute to the next generation for which you are morally responsible The schoolmaster, he holds is bound to see that the seed is good and that it is properly sown. Only he must not be over-anxious about his influence This was the charge brought by some critics against Dr Arnold's system at Rugby Meredith safeguards his method by protesting that the master must not smell of his office His hero, in the novel referred to, declares "The schoolmaster ploughs to make a richer world, I hope He must live with 'his boys' join with them in their games, accustom them to have their heads knocked with what he

wants to get into them, leading them all the while, as the bigger schoolfellow does, if he is a good fellow Avaunt favouritism — he must like all boys. And it's human nature not so far removed from the dog, only it's a supple human nature there's the beauty of it We train it Nothing is more certain than that it will grow upward '

Throughout his novels he discusses, of course, education in the wider sense of the term, the education which a man gives to himself or which he receives from his social environment The criticism of this, as, for example in *The Empty Purse*, is trenchant enough. But the specific question of the education of children at school is before his mind particularly in the novel mentioned J MOFFATT

MERTON, WALTER DE (*d* 1277) —He was Bishop of Rochester from 1274 to 1277 He studied at Oxford, was a man of liberality and great learning Being connected, perhaps by birth with Merton in Surrey he assigned manors in Surrey for the support of scholars and founded the " House of the scholars of Merton " at Malden near by In 1274 he transferred the House to Oxford where it became the beginning of the true collegiate system with warden bailiff, and other officers and was a model for future foundations

MESMERISM —There may occur in conscious life, temporary lapses from the full play of our faculties which are neither rhythmic spasmodic, nor chronic but are under control of an outside person The double incident of mental disorganization and outside personal control may be traced through many grades of life

" In the state of animal hypnosis, seen, for instance when a snake ' becomes a stick, there is a sleep-like inability to move or to ' right ' the body when placed in an abnormal pose There is a striking change in the tone of the muscles and a great decrease in sensitiveness to touch and to pain It cannot be separated from human hypnosis experimentally induced, and thus we have a long inclined plane of states—still imperfectly understood—from a sudden stoppage of movement up to prolonged trance ' (J A Thompson)

Mesmer a Vienna physician taking his professional qualifications in 1766, has given his name to a group of practices for inducing and governing the lapses in question Such practices are very ancient They have played a large part in the necromancy and ceremonial of prehistoric and uncivilized races, and explain many incidents of surviving legend and chronicle which might otherwise appear incredible to modern criticism Mesmer's distinction was to have made them a systematic professional pursuit He is described as submitting his subjects to the flow of a supposed influence from a cylinder or vat which contained accumulators of " magnetism " imparted to them from himself, and then modifying the somnolence or the excitement that resulted by personal touch fascinating gaze or hands outstretched and outspread or passed along an aerial path or a bodily surface, as though tracing out a groove of healing The outstanding interest of the conception which Mesmer and his followers entertained of their practices is that of a personal prerogative and the surrender of faculty by one human organism in the presence of another But the crude physics of magnetism which they offered in explanation has been now superseded by a psychology of suggestion, while there have been framed for the guidance of analogous practices, conceptions—both physiological and psychological—which do not include any necessary personal relation

Hypnotism. Braid, a Manchester surgeon, began experiments in 1841 to which he gave the name of hypnotism, because, like sleep, they may be subsumed under a physiological idea. Special physiological stimuli, a bright disc held before eyes that remain unaverted, or a touch in the locality of special nerve centres, may disintegrate the system of nerve functions in a way like that accomplished by the mesmerists

In 1878, Charcot, at Paris began a more thorough correlation between stimuli and phases of disorganization, which left no prerogative for the hypnotist except applying the one to, or for the sake of, the other " The hypnotiser is nothing, the hypnotised subject is everything " (Luys)

It is not so easy to be content with a conception which eliminates personal prerogative when we are dealing with the vagaries of " a mind diseased " as when we are checking the virulencies of neural asthenia In place, however of a stark and mystic usurpation of a man's self governing powers by another, such as would correspond to Mesmer's penetrative magnetism practices were tried which were an appeal to the man himself and in the case of hypnotism were an aid to his voluntary, or at least collusive, suspension of full consciousness Binet (*q v*) conceived hypnotism as a temporary change of relation between the conscious personality and a sub-conscious or co-conscious personality in course of formation, or capable of formation, within the individual who ostensively answers the roll-call of society William James conceived it as a transitional moment in the waxing and waning of full consciousness, which could be prolonged by the collusive aid of an outside person, but which must still abide by a scheme of disintegration as to which the latter has no voice

" The great vivacity of the hypnotic images (as gauged by their motor effects) the oblivion of them when normal life is resumed, the abrupt awakening, the recollection of them in subsequent trances the anaesthesia and hyperaesthesia that are so frequent, all point away from our simple waking credulity and ' suggestibility,' as the type by which the phenomena are to be interpreted, and make us look rather towards sleep and dreaming, or towards those deeper alterations of personality known as automatism, double consciousness, or ' second ' personality for the true analogies of the hypnotic trance " (W James)

A method of practice on " Suggestibility " was initiated by Liébault a physician at Nancy, about 1860 Liébault detailed six degrees of influence, under which such characteristic reactions as those mentioned by James successively emerge, too disparate to be explained fully as matters of degree The present writer conceives that the operator, with patient finesse induces a perversion of the credulity which belongs to the warp and woof of rational life, though happily, at the slightest signal of his withdrawal—a flick, a breath, or a gesture—common belief contagion of feeling social generality of purpose resume their function on the loom of our mentality, and with them, full consciousness

J BROUGH

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METALLURGY, THE TEACHING OF—The "Metallurgical War" which burst upon the British Empire on the night of 4th August 1914 has rendered it unnecessary to labour the vital importance of metallurgy to the safety of the country Nevertheless in the past the educational powers especially in the older universities have regarded metallurgy as a minor subject and in most instances the newer local universities have somewhat unfortunately relegated the Lecturer or Professor in Metallurgy to be more or less a vassal of the Professor of Pure Chemistry or the Dean of Pure Science With a single exception even the modern universities only timidly granted the bastard degree of B Sc (Met) This degree commanded little respect from the heads of the great munition firms Only one University (namely that of Sheffield which is the heart of the steel world) has instituted degrees and Associateships in Metallurgy The degrees are B Met Bachelor of Metallurgy M Met Master of Metallurgy and D Met Doctor of Metallurgy At the beginning of the session 1918 there were on the Register of Sheffield University 8 Doctors 13 Masters 25 Bachelors and 150 Associates in Metallurgy The Associateship which unlike the Degree does not necessitate matriculation was unavoidably founded to draw into the systematic study of metallurgy an invaluable class of students namely metallurgical managers and chemists in works who as breadwinners could not afford an orthodox university education This Associateship granted for both ferrous and non ferrous metallurgy is open to both day and evening students This necessarily involves double sessions a procedure naturally very hard on the staff and regarded with grave disapproval by many university authorities Such a scheme is nevertheless absolutely essential to the best interests of British metallurgical education

Equipment of Laboratory Any university or college which institutes a metallurgical department can in the first instance only command success by a lavish laboratory equipment The laboratories necessary for the proper teaching of metallurgy are of a nature calculated to bring dismay to the hearts of the average education authority because involving the expenditure of tens of thousands of pounds For instance in the main steel laboratory of the University of Sheffield casts of open hearth steel up to nearly 2½ tons have been made Also when this furnace is working the day shifts are taken by day students and the night shifts by evening students proceeding to a Degree partly by evening study or usually to the Associateship Theorists in education have stated that such a system is impossible Nevertheless for over a quarter of a century the evening students of metallurgy at Sheffield have after their ordinary day's work come to the furnace at 7 p m going home at say 4 in the morning and back to their works duties at say 9 o'clock In the face of such facts as these cut and dried educational theories break down and all honour is due to the students who have shattered such theories In the early stages of metallurgical education in schools (public and private) it is to be regretted that there is no organized system of selection for children whose inherited capacity might be fostered to render them of great value to the State Their abilities instead of being developed are often suppressed by a foolish uniformity Now the foundation stone of metallurgy is chemistry but in our public schools secondary schools and council schools no system of selection for boys or girls who have a bent for chemical science exists Hence more often than not such boys and girls are virtually lost to the country to which their potential ability might in the future be of great value

Women as Metallurgical Chemists Another phase of metallurgical education has been revealed by the war in a remarkable manner and that is the great potential value of women as metallurgical chemists The War Office combed out many junior chemists in munition works (*e g* young analytical chemists checking the composition say of the copper-driving bands or the special steel of shells for the Front) Sheffield University was asked as an emergency measure to train women to fill the gaps in the industrial fighting line A short intensive training was of course all that was possible but the result was surprising These women volunteers in the great majority of cases proved a complete success Their progress was rapid, their work clean intelligent and most conscientious The woman metallurgist came to stay

To sum up the situation the country has now begun to realize the vital importance for its safety of trained metallurgists and metallurgical chemists As has already been stated the foundation stone of metallurgy is chemistry and our educational system so far as this matter is concerned should be that our elementary and secondary schools must devise some system of selecting boys or girls with an hereditary chemical bent and giving them opportunities to matriculate and to proceed under generous scholarships to their degree at a university lavishly equipped and manned with accomplished staffs capable of turning out metallurgists of the highest intellectual and technical order J O A

METALWORK, THE TEACHING OF—Properly taught metalwork is most interesting and educative but the following principles are fundamental—

1 The nature of the material must govern the design

2 The design must be simple

3 The teacher should make the model himself before asking students to make it

4 The designing and setting out of any selected model should be done under the supervision of the teacher as metals owing to their characteristics have to be humoured

5 Machines tools and other equipment of any workshop where metalwork is done should be chosen by an experienced craftsman teacher

6 The humanist side of metalwork must be given due prominence

The instructor should be able to give interesting lessons aided by the lantern on the geographical distribution of ores and metals and their production with historical notes illustrated by pictures of famous and beautiful pieces of metalwork in different countries There are many stories connected with masterpieces in metal such as St Patrick's Bell Henry VII's Chapel in Westminster Abbey Jean Tyou's work in St Paul's Cathedral and at Hampton Court Lorenzo Ghiberti's doors of the Baptistry at Florence the bronze Perseus

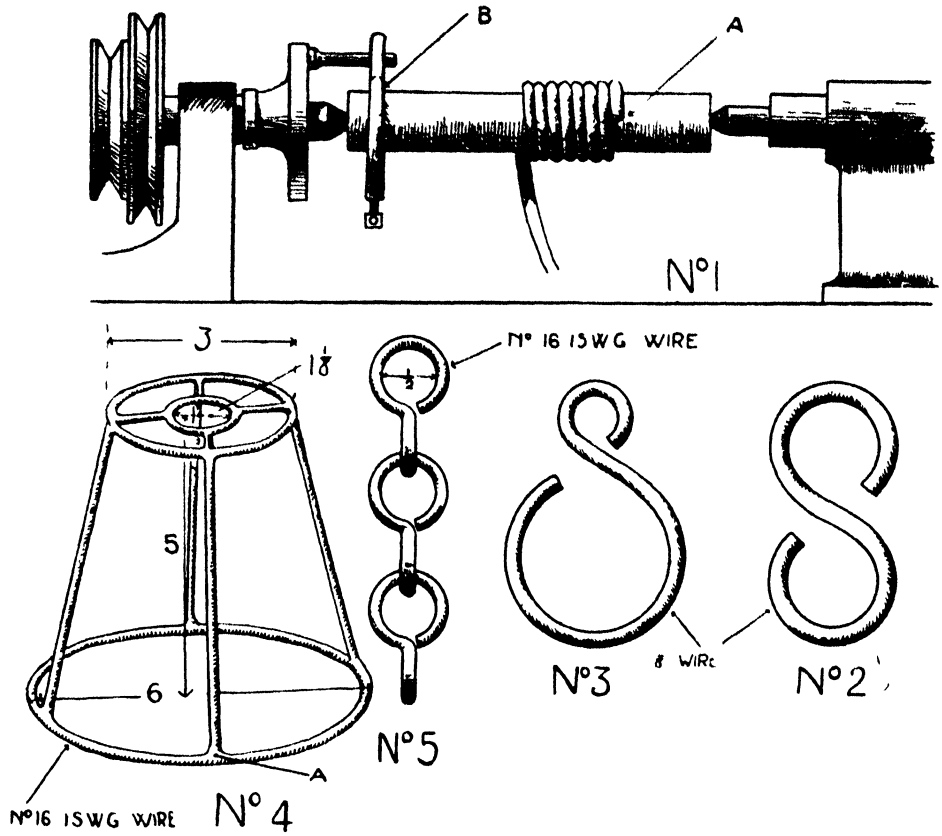
B
A
N°1
3
1⅛
5
6
A
N°16 ISWG WIRE
N° 4
N° 16 ISWG WIRE
½
N°5
N°3
⅛ WIRE
N°2

Fig 1

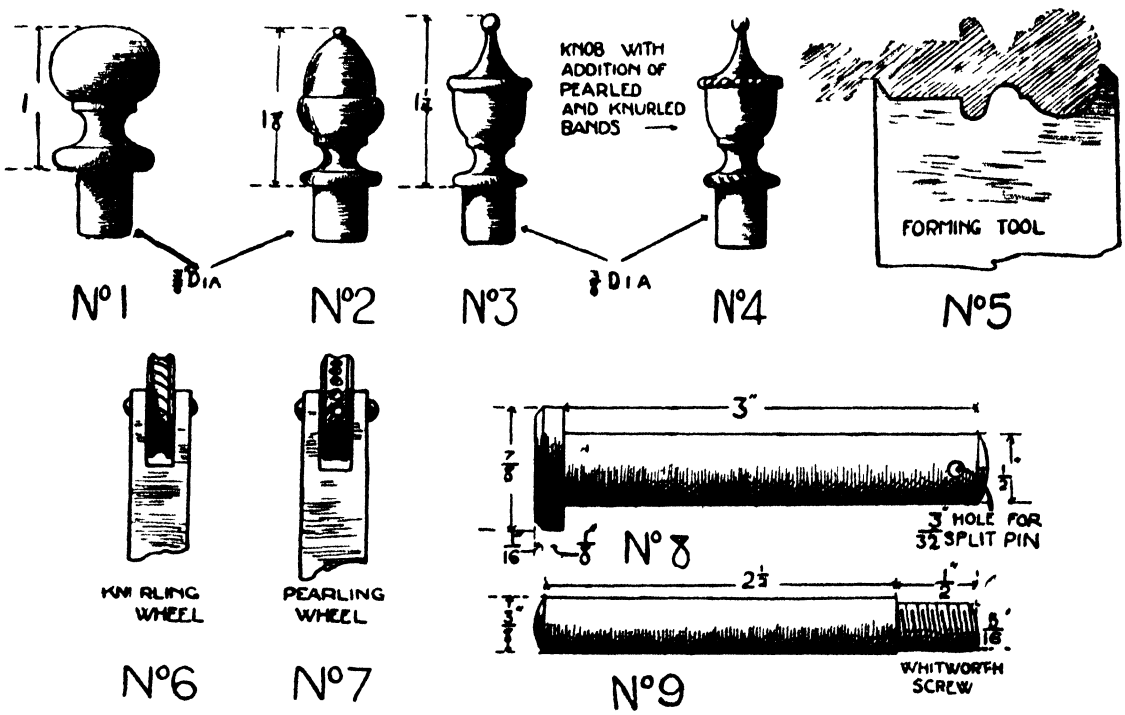
1
1⅛
1¼
KNOB WITH ADDITION OF PEARLED AND KNURLED BANDS
FORMING TOOL
⅜ DIA
⅜ DIA
N°1
N°2
N°3
N°4
N°5
KNURLING WHEEL
PEARLING WHEEL
N°6
N°7
3"
7/8
1/16
⅛
N°8
3/32" HOLE FOR SPLIT PIN
2½
½"
5/16"
WHITWORTH SCREW
N°9

Fig 2

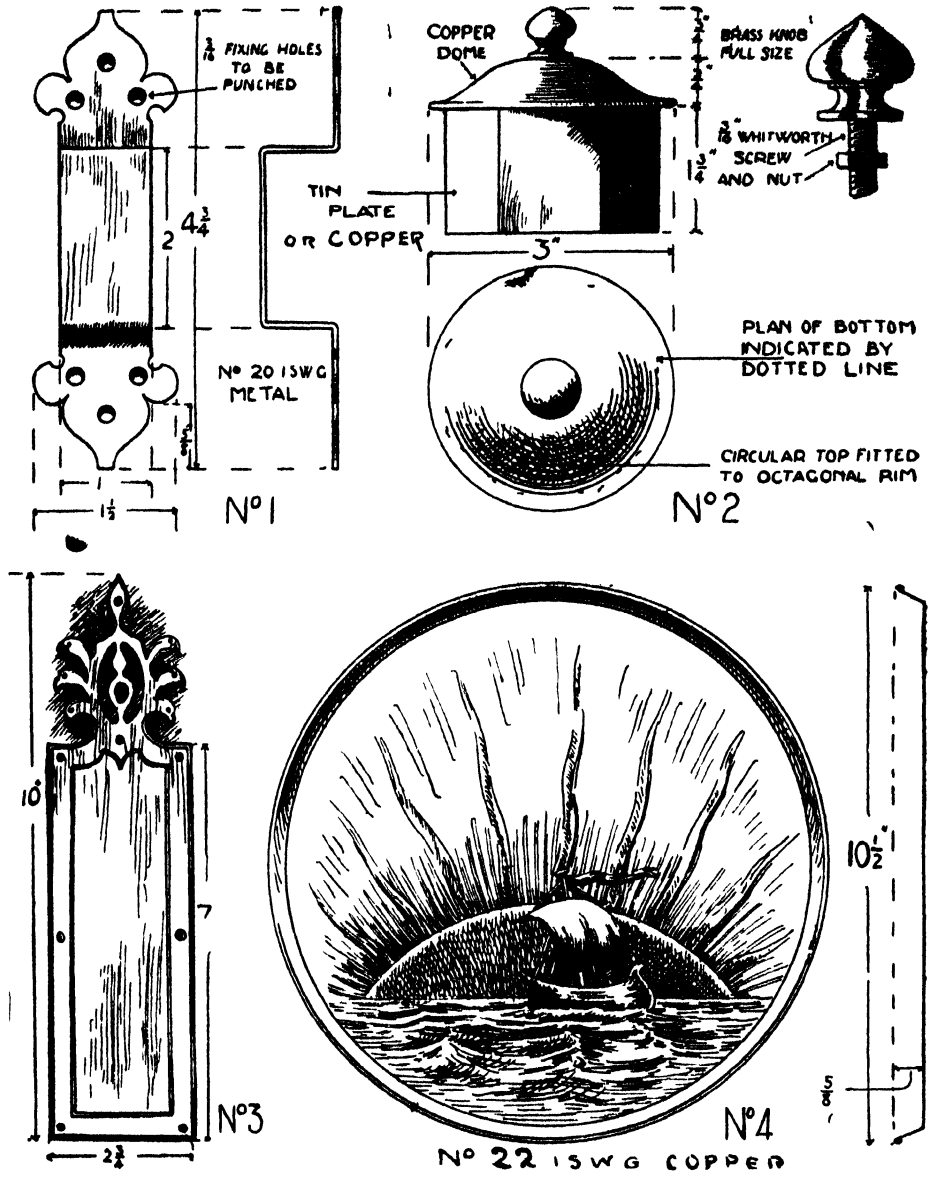

FIG 3

of Benvenuto Cellini and the work of Quentin Matsys of Antwerp The work of famous Continental armourers, such as the Kollmanns and the Negrolis and the biographies of such men as James Watt Henry Maudsley James Nasmyth Andrew Yorranton and David Mushet all afford rich material for interesting lessons

Illustrations of technical processes views of various shops, showing modern methods of manufacture the welfare of the workers distribution, and factory organization should be included in a good scheme The subject is so wide and varied, that it can be made highly instructive

With regard to workshop practice in metalwork, it is not advisable for boys under the age of 13 to take part in it, as, generally speaking, they are not strong enough at or above this age, however, the lighter forms of the following materials may be successfully manipulated Aluminium brass, copper German silver gilding metal iron silver steel tinned plate and zinc Wood patterns of moulds can be made from which iron castings can be obtained to be used for elementary exercises in the casting of lead

Wire. The possibilities of wire are not great, the method of making rings shown in Fig 1 (No 1) is the one followed in making all sizes of rings, though not necessarily in the lathe, *A* is a hole in the mandrel, in which the end of the wire is inserted, *B* indicates a lathe carrier Nos 2 and 3 show simple examples of wire bending, No 4 illustrates a wire frame suitable for covering with material for use on an electric lamp-holder Here we have three rings of different sizes, with short pieces cut to length and soft-soldered Note the joint marked *A* No 5 is a piece of single jack chain made of



The Mohammedan Anglo Vernacular College, Aligarh

PLATE LXIII

rings at right angles to one another, this requires more difficult bending, and a bending block should be made for it

Rod metal widens the scope of the work, and by the addition of sheet metal the possibilities are greatly extended Rod and bar of various sizes and sections lend themselves to a great variety of treatment as illustrated in Fig 2 Nos 1 2 3 4 can be turned from ¼ in brass rod Old files can be used to make forming tools as in No 5 and a few knurling and pearling wheels (*see* Nos 6 and 7) of various patterns still further extend the number of shapes These knobs can also be made in aluminium bronze or copper, and be used for the ends of curtain rods stair rods pillars and other finial decorations Nos 8 and 9 give opportunities for accurate turning and screwing At this stage accuracy of size should be insisted upon They are cotter pins of different types

Sheet metal provides opportunities for modelling by means of hammers and punches this should be preceded by modelling in clay or Plasticine thus training the eye to appreciate form and proportion and incidentally preventing mistakes from being made in the metalwork Sheet metal can be pierced by drilling sawing and punching (see Fig 3, Nos 1 and 3), and gives many opportunities for drawing It can be easily bent, and so we may apply geometry for the development of surfaces (see Fig 3 Nos 1 and 2) Modelling by means of hammers stakes and punches is shown in Fig 3 (Nos 2 and 4) No 1 is a clip No 2 a trinket box, No 3 a finger plate No 4 a card tray These can be made of brass bronze copper German silver or real silver Cleaning polishing colouring and lacquering give variety and colour to the models besides being a practical lesson on the application of chemistry to metals

Many hints for new models can be obtained from museums, some small object or part of an object being sketched and then adapted to suit school conditions

The foregoing may seem applicable only to technical institutes This, however, is not so, for owing to the wealth of possibilities of treatment peculiar to metalwork part of the course could be arranged for the school, where the aim is not so much to turn out a craftsman as to teach a subject that may become an interesting pursuit or recreation Only those portions that are capable of being adapted should be used and the schemes may easily be modified to suit any conditions For school work the possibility of linking the subject naturally and easily with geography and history with clay modelling design and geometrical drawing and especially with physics and chemistry must not be overlooked A J SHIRLEY

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METEOROLOGICAL SOCIETY, THE ROYAL.—This Society was founded in 1850 as "The British Meteorological Society" and took its present title in 1883 It consists of a body of Fellows, who are entitled to the designation F R Met S, and a few honorary members

Meetings are held monthly at the Institution of Civil Engineers, or at the Society's Rooms, 70 Victoria Street, Westminster and the papers read at the meetings are printed in the *Quarterly Journal* of the Society, which also contains notes, correspondence reviews, and other matter of general interest bearing on meteorology

From 1874 to 1911 the Society, aided by a large number of voluntary observers, collected a very comprehensive series of observations on air pressure, temperature humidity rainfall and wind, made on a uniform plan and giving strictly comparable results The Society has also carried out many scientific investigations on natural phenomena, such as thunderstorms, conditions of the upper air, wind force and wind velocity

At the offices of the Society is a valuable meteorological library of about 24 000 books and pamphlets and about 1,000 manuscripts besides a large and interesting collection of photographs and lantern slides illustrating meteorological phenomena and instruments

To advance the general knowledge of meteorology and to promote an intelligent public interest in the science, the Council in 1905 appointed a lecturer to act in co-operation with scientific societies, institutions and public schools Lectures have been given in various parts of the country at schools and local scientific institutions

Admission to the Fellowship is obtained by election upon the recommendation of three Fellows, and every Fellow pays an annual subscription of £2 or a life composition of £25 Fellows receive gratis the *Quarterly Journal* and the *Monthly Weather Report* may attend the meetings, and have the free use of the library

METEOROLOGY—The science which deals with the physical phenomena of the atmosphere is capable of being turned to account in education at all stages of the progress from the earliest Nature study which may precede the alphabet, to the university

Its first use is as an exercise in the art of observing, its second, as an example of the handling of statistics its third as affording opportunities for deductive and inductive reasoning and its final value lies in the scope it affords for original investigation into the workings of Nature All this might be said of many other sciences but meteorology stands alone because of its living interest since the state of the weather in temperate countries is the one theme which interests equally the young and the old, the rich and the poor the worker and the idler also because the observations taken even by the children of an elementary school may be of service in advancing scientific knowledge and finally because the laws of weather can be turned to practical account in almost every employment To the advanced student there is the added charm that the science is at present in a transitional state much as chemistry was in the early years of the nineteenth century, or as astronomy was in the seventeenth century The old authorities have become out-of date, and modern investigators have not yet formulated broad general principles which explain all the known facts

Foundations of the Study. The first stage of instruction in meteorology is part of the physical geography which forms, or should form, a very

prominent element of the earliest Nature study Water is seen to lie on the land in puddles or ponds, in lakes, and eventually, as the sea which abounds the land on every side Water is seen to flow over the land in drains brooks, and rivers, always flowing downward and outward towards the sea Finally, water separates from the air in dew, hoar-frost, rain, snow or hail All the water on the Earth's surface can be traced back to precipitation from the air, and only this half of the cycle is visible Clouds are associated with rain by a child from earliest memory, and perhaps the first thing to be done is to make it clear that a cloud is not a bag of water that may be emptied or burst to become rain A cloud is merely an elevated mist and observations show that a mist consists of little drops of water which have a tendency in certain conditions to run together like dew-drops on a cabbage leaf, and so to form large rain-drops The sun shining on a wet pavement dries it by turning the water into invisible vapour and it is such vapour in the air that, when cooled condenses again into clouds and rain The sun is the source of heat, and the heat received from the sun when there are no clouds to obscure it is greatest when it appears highest in the sky (*i e* in summer) The air is always moving its natural condition being one of motion, not of rest and the wind carries the clouds along Clouds float at different heights and the direction in which they move shows that the wind at different heights often blows from different directions These are the essential observational facts in meteorology and should be impressed not by the authority of the teacher s statement but by pointing out the actual instances If a child can recognize these phenomena as well as rainbows halos and the more striking happenings of thunder storms snowstorms and frosts the foundations for the study of meteorology have been well and truly laid

The Measurement of Phenomena. The next stage should be the measurement of phenomena leaving the reason why one phenomenon leads to another and all theory, to a later stage

Too often school meteorological observations are almost worthless educationally because they are made irregularly with inaccurate instruments Measurement should be a moral as well as a physical exercise To measure inaccurately or to record incorrectly should be treated as no less wicked than to tell a lie Only by such means can respect for science be inculcated It is better to equip a school with one good instrument at a time than to have a dozen home-made or cheap makeshifts A rain gauge is the simplest and most useful instrument to begin with Let it be of the Snowdon pattern with a glass for measurement divided in hundredths of an inch or tenths of a millimetre according to the choice of the school authorities Let the reading be made every morning at the same hour by a pupil chosen for the day or week and the measurement verified by the teacher before being entered on the record—a little ceremony helps to impress the vast importance of accuracy The next instrument should be a thermometer in a proper shelter to shield it from sun and rain and when funds permit a maximum and a minimum thermometer of standard pattern should be added The instruments should be of the best construction but may be in the simplest mountings On no account should the cheaper and inaccurate combined maximum and minimum thermometer be used A barometer is the next desideratum, and with its readings meteorological theory may be introduced to the more advanced pupils, and the principles of weather forecasting in the later years of school life Much use should then be made of the weather charts published daily weekly, and monthly by the Meteorological Office The principle of these charts is simple and is clearly set forth in Sir Napier Shaw s *The Weather Map* The weather charts enable the movements of atmospheric systems of low and high pressure over the country to be followed easily, and the relations of the weather associated with each type to be grasped

The Daily Weather Report published every forenoon shows the distribution of weather over Western Europe at 7 a m on the same morning and the actuality of the facts dealt with can be made very impressive

The British Meteorological Office has introduced absolute Centigrade degrees as units for temperature and millibars as units of barometric pressure these have not yet been adopted outside the British Dominions It is necessary for the relation of the new units to the old to be taught

The eye-observations—non instrumental and instrumental—so far dealt with can be carried out without reference to text-books and indeed the pupils in elementary schools need not have any scientific books put into their hands if the teacher has interest enough to read up the subject so as to marshal the work of observing and recording and the drawing of simple inferences

For the fundamental observations of rainfall in the United Kingdom all instructions and specimen forms may be obtained gratis from the Superintendent of the British Rainfall Organization, 62 Camden Square London N W 1 All records of rainfall sent to that address will be utilized if they stand the test for accuracy in the compilation of the annual volume of *British Rainfall* and if desired criticism and helpful advice will be given gladly

The simplest practical guide to the observation of the other meteorological elements is W Marriott s *Hints to Meteorological Observers* (1s 6d) With this the advanced teacher should read the *Observers' Handbook* of the Meteorological Office (3s) which gives the theoretical principles on which some of the instruments are constructed and also a full exposition of the new official units Few except the largest schools can attempt to keep observations with the completeness and regularity required by the Meteorological Office but the great public schools and all technical or agricultural colleges ought to do so as part of the routine of the establishment Full information can always be obtained on writing to the Director of the Meteorological Office South Kensington London S W 1

Teachers should be cautious in using the older text books, as these in spite of many excellences represent a stage of knowledge beyond which we have now passed In addition to *The Weather Map* already referred to the following small works may be recommended each in so far as the author intended it to be used Lempfert's *Weather Science* Dickson s *Climate and Weather*, Fowler and Marriott s *Our Weather* and Bonacina s *Climatic Control*

To these may be added the chapters on the "Atmosphere" in Mill's *Realm of Nature*, and the monthly parts of *The Meteorological Magazine*

Climatology, and Advanced Meteorology. Climatology dealing with the distribution of average

weather conditions over the globe, is a branch equally of Physical Geography and Meteorology, and may be considered in relation to either It should be regarded as an advanced subject hardly adapted for school instructions except in the most general way

The advanced study of meteorology is necessarily in the main a matter of books, though as yet there are few text-books available By far the best compendium of meteorology especially valuable for its foot-note references is Hann's *Handbuch der Meteorologie*, and for the twin-subject his even more extensive *Handbuch der Climatologie* The former can only be consulted in its German form, but an abstract of the latter has been translated by R de C Ward of Harvard, who has also a valuable work entitled *Climate*

Of English treatises Scott's *Meteorology* and Abercromby s *Weather* in the International Science Series may be read with profit while the article on "Meteorology" in the eleventh edition of the *Encyclopaedia Britannica* and Milham s *Meteorology* give the position of American meteorologists up to a later date Professor Milham's is the best arranged modern text-book of meteorology in English published in recent years

The great advances now being made largely as a consequence of researches in the upper air are foreshadowed in Sir Napier Shaw s epoch making work *Forecasting Weather* which is absolutely indispensable to the serious student It may be supplemented by more recent memoirs published in the official volumes of the Meteorological Office, in the publications of the Royal Society and the Royal Society of Edinburgh and in the *Quarterly Journal of the Royal Meteorological Society*

An essential aid to all meteorological study is afforded by Bartholomew s great *Atlas of Meteorology* and invaluable illustrations are supplied in the late Sir John Eliot's *Climatological Atlas of India*

The foregoing hints are based on the assumption that the reader resides in the United Kingdom In any other part of the English-speaking world the publications of the Meteorological Office or Weather Bureau of the Government should be consulted In the southern hemisphere it is essential to bear in mind that books written for the northern hemisphere do not apply in their entirety and many matters involving direction require to be adjusted H R M

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METHODOLOGY.—That professional teachers use method in their instruction goes without saying Many have worked out their own methods, others have adopted methods they have seen in successful use, whilst in most cases, probably teachers are following methods that are partly original and *ad hoc*, and partly borrowed In deciding upon what methods he will employ, the teacher thinks both of the subject and of the pupils Hence he teaches mathematics in a different way from history and modern languages in a different way from both Similarly he knows that a method that would serve admirably for a fifth form would not suit the preparatory school boy and his courses in the sixth standard will not follow the same plan as those in the kindergarten or in the third standard

But while methods of teaching will vary with the subject and with the relative development of the pupils there are certain general principles at the back of all methods that give them a common character There is not much in external appearance to connect the water power used to drive a mill and the weights that drive a grandfather clock Yet both are applications to different problems of the general principle of gravitation and it may well be that the schoolmaster's course in nature study and in history, different as they are in form and detail rest upon common principles diversely applied This study of the underlying principles of all teaching methods, properly so called is what we mean by methodology

As in physical science so in education, these general principles have been differently conceived from age to age Gravitation was at work before Sir Isaac Newton and in practical life many useful applications were made of that principle before its scientific formulation was achieved So in education much good work was done before principles of method as we now understand them were laid down 'Spare the rod and spoil the child" was a general precept, perhaps the leading one, in the methodology of the schoolmaster until very recent times Starting with a belief in the inherent wickedness of man, it is an easy step to the doctrine that the schoolmaster s first duty is to drive the devil out of his pupils In mediaeval art, the rod is the unfailing symbol of the pedagogue

Methodology of Comenius.—In the modern sense of the term however, Basedow (*q v*) and Pestalozzi (*q v*) were the first methodologists It is true, of course, that both were inspired by Rousseau, and that in the seventeenth century Comenius (*q v*) had (in his *Great Didactic*) made pioneer contribution to educational methodology He had dimly apprehended the Baconian principle of induction which requires general statements to be based upon the critical examination of particular instances and in his Latin school books he made a crude attempt to apply that principle to a practical situation But Comenius had a keener eye for fanciful analogies between external nature and his pupils than real insight into the mind of the schoolboy Nevertheless he arrived at many half-truths, which might have meant a great step forward in educational practice had he not brought himself and his doctrines into discredit by association with theological mountebanks, who made the fullest use of him His ten universal principles of instruction frequently find an issue in psychological conclusions that are sound enough as intuitions, especially if we read into them all that his words now suggest It is the naïve analogies upon which his inductions are based that reveal the weakness of the "methodology"

of Comenius Thus the seventh of his principles runs "Nature compels nothing to advance that is not driven forward by its own mature strength" We see this in the fact that chickens leave their eggs only when their limbs are fully formed, and trees do not drop their fruit until it is ripe It follows, therefore that nothing should be taught to the young unless it is not only permitted but actually demanded by their age and mental strength that nothing should be learned by heart until it is understood and nothing should be given to boys to do until it has been fully explained From similar analogies with animate and inanimate nature Comenius finds that the study of things should precede the study of words that instruction should be given as tersely and clearly as possible that the desire to learn should be stimulated that we should teach only those things of which the practical use can be easily shown Valuable as these general precepts of method are at best they constitute a code of rules based upon comparisons with irrelevant and therefore unconvincing objects They are in no sense a unified doctrine derived from the accurate analysis of the situation such as we expect a methodology to offer

Methodology of Pestalozzi. Pestalozzi s procedure was different He saw that any general principles of method must be arrived at by unlocking the secrets of the mental processes of the learner, working not of course *in vacuo*, but upon the actualities of life He attempted to solve this problem by laying bare the primary elements from which all thought content is derived and by getting at the nature of the processes involved in 'working up these elements into actual mental content He found these ultimate elements to be sound, form and number and the process of working up to be inductive in character the advance being made from what he called *distinct* through *clear* to *definite* ideas Putting this into more modern terms Pestalozzi s psychological analysis led him to insist upon the importance for mental development of (1) the distinct apprehension of single objects distinct ideas This he thought involved knowing the name of the object its form and its oneness—sound form and number (2) experience of the same objects in various contexts thereby increasing our detailed knowledge of the objects (clear ideas) and (3) the comparison of these various presentations of the objects enabling us to distinguish essential from accidental or occasional features and so to arrive at definitions of the objects (definite ideas)

Using the analogy of plant development he further pointed out the continuity of the process of development, and the scarcely perceptible steps in the advance made

Here in brief we have the fundamental principles of Pestalozzi's Elementary Method as he called it The term has often been misunderstood, as if it meant the method of elementary instruction On the contrary he regarded it as applying to the teaching of all subjects and to the teaching in all types of schools The problem of the different subjects was a problem of so arranging the matter that it was adapted to what were for him the laws of mental growth and he planned a complete series of school books on these lines Thus he had achieved a methodology

But Pestalozzi s psychology was faulty, and his practice was often a wooden and pedantic application of bits of his doctrine without reference to the rest That, however, does not concern us We may note that although he worked out his elementary method chiefly as a problem in intellectual education, he tried to apply the same procedure *mutatis mutandis* to physical and moral education Apart from the fundamental error involved in this three-way approach to the problems of an educational methodology a scheme based upon the analysis of the process by which we arrive at a definition could hardly be made to apply to the development of moral feeling or to the right ordering of physical exercises and all the ingenuity of Pestalozzi and his followers failed to accomplish the impossible.

Methodology of Herbart. Herbart (*q v*) who owed much of his interest in education to Pestalozzi was more successful in establishing a methodology of educational practice He was careful to avoid the error of appearing to sunder human nature into three separate compartments Mind is an indissoluble unity which in the adult takes the form of what we call character and the importance of education comes from its being a character forming agency In other words morality is the final aim of education But morality means a completely enlightened will and right-willing itself is the consummation as it were of many sided interest and many sided interest is to be the object of instruction It follows therefore that the organization of curricula and the methods of teaching must be determined by the conditions of development of a many sided interest

Herbart s psychology and methodology are described in detail elsewhere From the educational standpoint the emphasis laid upon instruction is its chief feature Defects of character are due to defects in the circle of thought and this may be avoided by schemes of instruction which are at once interesting embracing and well knit

Herbart s own writings are too philosophical for the practical schoolmaster His followers notably Ziller have reduced his abstractions to practical shape sometimes extending his teachings almost beyond recognition To them we owe the popularization of the formal steps in instruction (*q v*) and the working out of curriculum on the two principles of *concentration* and *culture epochs* Although, in a large sense of the term the theory of the curriculum is included in the methodology of education, it is not usually so treated The formal steps on the other hand and the principles upon which they rest constitute the essence of the Herbartian methods of instruction These steps are five in number a preliminary step in which the teacher s concern is to make active in his pupil s minds those ideas that relate most closely to the matter in hand (preparation) followed by three others that form the logical approach to a general notion or principle (presentation comparison and generalization) and concluding with the deductive application of the general principle to individual cases (application)

Steps one and two (preparation and presentation) constitute the first period of the lesson The preliminary awakening of related ideas has culminated in a state of expectancy which is favourable to the right apprehension of the new matter to be offered in the presentation stage of the lesson When this new matter is clearly apprehended (apperceived) it is ready for the logical treatment which is to follow

On the side of the teacher such a scheme involves, first of all the determination of the principle (step four) the intelligent application of which is to be the consummation of the lesson This principle gives unity to the lesson, and makes what is called the "Method-whole" As thus conceived, the lesson may cover several time-table periods

A scheme of this kind is obviously applicable to all those lessons in which a general principle a rule a definition etc can be inductively ap proached and deductively applied It is in fact the ordinary procedure of an inductive lesson, such as we are familiar with in mathematics science and grammar Much ingenuity has been spent in trying to fit historical narrative geographical description and even art into the same Herbartian framework but generalizations in such branches of knowledge cannot be reached by school children, and the five formal steps cannot therefore, apply to instruction in such subjects Although Herbartian doctrine seems to have dominated school practice in America, and although it had a certain hold in our own country for some time, the development of modern psychology and, even more than that the advance of the biological point of view in education has brought us sounder foundations for our teaching methods

The Activity Doctrine. In justice to Froebel (*q v*) we may fairly credit him with anticipating through his intuitive grasp of child nature these later doctrines "Learn by doing" was the central principle of his methodology and his Come let us live with our children ' was his most important practical injunction to teachers

Activity, movement, life—these are the chief points of the new methodology Children do not come to school to be prepared for life but to live ' We learn to live by living and the most striking feature of human life is its purposefulness Deprive a man of the power of purposeful action—of working that is to say for ends of his own, self chosen self initiated self directed—and he loses his manhood He is at once enslaved *Mutatis mutandis* this is equally true of children By reason of their bodily weakness and their inexperience, limits to freedom of action must be set and school is designed to provide certain protective agencies which make freedom a possibility It is not a prison-house in which children are prematurely drilled into habits and "knowledge which will be useful in later life, but a society in which service and responsibility are the chief motives for effort (*v* Dewey, Montessori, Freedom)

Such a principle is not of course contrary to the Herbartian formula of instruction It is at once deeper and wider It accepts "morality" as the final aim in education but rejects the view that morality is a purely intellectual product It does not exclude instruction, and would even make use of the Herbartian ' steps when an inductive procedure is applicable but it seeks a motive for the effort to learn in the life of the pupils, in its internal and external relations, rather than in the ingenious *ad hoc* preparation stages with which the Herbartian opens his lessons

This biological conception of method in schools is in practice not new Good teaching in the past has always owed its goodness to its vitality Pestalozzi Froebel, Herbart, whose doctrines we find defective, were not bad teachers because they did not see the fundamental principles that found expression in their work Recent biological conceptions have thrown a new light on educational procedure and new analyses are possible But this is not of merely academic interest The importance of new analyses always lies in the fact that they make new synthesis possible, and, in point of fact, new programmes of work, new special methods, have sprung up in great quantity, just because the school situation has been freshly diagnosed

The principle of activity is perhaps too broad to give very definite guidance to the teacher If mere activity would serve, children might be left to educate themselves Society hands over its children to professional educators who are or should be skilled in directing this activity into educative channels Their pupils should leave them active as ever but capable of applying their energies to some form or other of public service This implies considerable development of the powers both of body and mind, and a desire to make the best use of them Hence a methodology based upon activity must consider in some detail the conditions favouring mental and bodily development The importance of the latter has been recognized in recent years by the establish ment of a national school medical service, and the principle of activity in education has been greatly reinforced by the study of bodily hygiene in school life (*v* HYGIENE) But the biological claim is not met by putting Swedish drill into the time tables in order to counteract the effects of wearisome hours spent in dual desks Radical change in the way of school furnishings and in the way in which school subjects are attacked is necessary before the methodological ideal can be reached

In the last resort the individual is a unity and not a mind in a body It is convenient to think of bodily needs independently sometimes, but only in so far as it becomes a more efficient instrument of the mind can the body be said to have needs A sound mind in a healthy body is a useful figure of speech, but when it leads to a separate hygiene of body and mind it is apt to lead to that notion of balance that would allow school children to pass from the meaningless effort to commit to memory lists of exceptions in Latin syntax to a similar meaningless grind at ' joints " in the woodwork room on the ground that the one exercise trained the mind and the other the muscles, although in neither case was the "whole pupil" present at the exercise

This divorce between mind and body is especially dangerous in the earlier years of school life, because mental development has its foundation in bodily movement The mind of the young school child is dominated by percepts and images and impulsive responses thereto The mind of the adult with his linguistic powers may be occupied with verbal symbols that have no relation to his immediate surroundings Between the two a great gulf is fixed and the methods of the teacher must conform to the laws that govern its passage In other words methodology must consider the psychological outcome of activity, and select such activities as will first of all strengthen the child's hold upon his environment, and enable him to give it a provisional interpretation, then lead him to a view of the world beyond, and so put him in the way of seeing himself and his immediate surroundings in their relation to the general scheme of things

This involves the psychology of perception, imagination, conception and judgment as the intellectual processes accompanying or developing out of activities that begin in instinctive impulses and ultimately reach the level of clearly conceived purpose

Bound up with this twofold problem of the relation of the curriculum to the development of intellect and purposefulness is that of the growing complexity of the pupils emotional life Methods that leave out of account the conditions under which emotional systems are formed about particular objects are likely in the long run to prove disappointing These then are the points at which psychology makes its contribution to the principle of method in education (*v* PSYCHOLOGY) It is however psychology approached from a definite standpoint Its problem is the genesis and development of intelligent purposefulness in an individual who desires to play a helpful part as a working member of society

The reaction against nineteenth century individualism and against an over intellectualized psychology has had a noteworthy effect upon educational methodology Man is a social animal He is fundamentally a co operator His whole civilization and culture is a co operative product The social constitution of man has in recent years received more definite recognition in educational practice The 'Play-way' is one form in which the social idea finds expression in the schoolmaster s devices That children develop best in an atmosphere of mutual helpfulness that if schools are to be a training ground for the best kind of citizenship they must make service a leading feature of their organized life that methods of instruction should rely largely on the social motive—all these are sufficiently recognized principles of modern pedagogical practice directly traceable to the fuller understanding of human nature and human society The psychology of the individual is being re-written and the educative process is being fundamentally revised with the steady advance of the idea that within the indeterminate limits of his hereditary endowment it is the inter play of social forces that produces the individual The complex needs of human society demand a great variety of individual service Special endowment of every kind is potentially a social as well as an individual asset the realization of which is one of the objects of education Not to force into a common mould but to encourage capacity in any direction that may be socially valuable is therefore, an important corollary to the general doctrine

Psychology as such has no voice at present in defining the precise nature of the service which society asks of its schools The problem of determining the measurable outcome of school life is not yet satisfactorily solved Examinations have many shortcomings Practical intelligence thoughtfulness and insight are difficult to assess in a short sitting Yet it rests with the schoolmaster and those who control him to settle what special equipment is best calculated to give a boy or girl a satisfactory start in the school of life, but the problems of the relations of the curriculum to social needs is not strictly speaking a methodological inquiry When that problem is provisionally settled, the schoolmaster is required to accomplish his task in the most economical manner The economical use of energy both in teaching and learning depends ultimately upon a sound psychology The study for example of economical methods of learning by heart of the place of rhythm in work, of various methods of learning to read, are all concerned with this question of economy Accurate psychological analysis will often spare disappointment in experimental inquiries of this kind

Here we are brought up against problems of special method In general we may say that the special method that is most economical of the pupil s time and energy in attaining the object is the right one though this may and will vary according to the temperament and skill of the teacher A delicate instrument coarsely handled is useless Special methods must then vary from subject to subject, and from class to class even from child to child though analysis of the nature of our special object may bring out common characteristics in all these methods Sometimes we are concerned chiefly to fix habits and the principles of habit formation (*v* HABIT) will apply in others we wish to lead our pupils to observe and discover facts and their relations to one another when the fact of observation itself needs analysis (*v* HEURISTIC METHOD) or we may be trying to lead our class to arrive at some general principle, and its application in which case our methods will be a particular application of logical principles (*v* INDUCTION AND DEDUCTION) In all cases some effort even some drudgery on the part of the pupil is called for but drudgery willingly undertaken for an intelligible purpose is not inconsistent with the principle of vitality Teaching means inciting to learn The pupil s response to the teacher s effort constitutes the educative movement in the teaching process

Zeal for a new methodology has led to many bitter attacks upon traditional schools and schoolmasters They are alleged to have taught useless things by choice as affording a mental training that would tell later on in any calling The critics of this doctrine of formal training deny that spread of power of the kind suggested takes place except in so far as there are common elements connecting the one activity with the other A fuller discussion of this controversy will be found elsewhere (*v* FORMAL DISCIPLINE) though here it may be noted that in all cases there is one important common element that is often overlooked viz the personality of the pupil The biologist might point out in this connection the fundamental importance of engaging the whole mind of the pupil in the work of the school Although it would be bad methodology that ostentatiously chose a side-track in human culture for his educational instrument, thereby engaging his pupils upon activities remote from practical interests of immediate value and importance, the error would be minimized if the side track were made a vantage ground from which wide vistas of the world were opened to those who were following it

Whatever the subject, "the letter killeth, the spirit giveth life' This is a classical expression for the principle of 'vitality' in education The most modern curriculum may in practice and in spite of itself, be reduced to formalism and be as deadening in its effects as the worst grammar grind that ever afflicted our schools J A G

METRIC SYSTEM, THE.—Professor de Morgan has stated that one-twentieth of the time spent in primary education and one-fourth of the time spent

Length	*Square Measure*	*Solid, Fluid and Dry*	*Weight*
M	M^2	L	KG.
Kilometre = 1000	"Are" = 100	Cube METRE = 1000	Tonne = 1000
METRE = 1	Square METRE = 1	Litre = 1	Kilogram = 1
Decimetre = 1	Sq Decimetre = 01	Decilitre = 1	Gramme = ·001
Centimetre = ·01	The cube Metre is the French "Stere" and the "Kilolitre" = 1 31 cub yds nearly The Litre is a cube decimetre = 1¾ pts nearly, the Tonne is = 0·98 (British ton)		
Millimetre = ·001			

in learning arithmetic is thrown away by the non adoption of a decimal system The *Metric* is the most perfect decimal system it is easily understood and readily applied to practice, it requires no compound arithmetic and affords great facilities for calculation and foreign commerce All weights and measures are based on one unit—the *metre*—introduced by France in 1801 as a ten-millionth part of an average arc of the Earth, from the Pole to the Equator at sea-level It has been scientifically determined as 39 370113 British inches From the metre has been deduced the unit of cubic measurement namely the *litre* if used for capacity and the *millistere* if used for volume, the unit being in either case a cube of which each edge measures a decimetre From the metre has also been deduced the unit of weight the *gramme* or the weight of a cubic centimetre of water at the temperature of maximum density A gramme = 15 43 grains Troy

Objections have been raised to the metric system on the ground that the numerous prefixes 'deci' deca- kilo- 'myria- etc are perplexing to the masses but few of these are ever used in practice The only denominations really needed are comprised in the above table

A few convenient multiples or subdivisions of the unit might be added to the above after the metric system has been well established

It is probable that some of the old terms will remain as in France, with slightly altered values

The English system has no unit of length lower than the smallest unit consequently it has to use fractions below the inch, the metric system has therefore a great advantage in dealing with quantities indefinitely small without need of division Common fractions can of course be used with the metric system when convenient, for example the half, quarter and eighth of a kilogram are 500 250 and 125 grammes respectively The metric system not only abolishes compound arithmetic, but, in most cases renders fractions unnecessary whether decimal or vulgar

The decimal character of the metric system has also the advantage of facilitating the change from one unit to another at sight, and it is usual to keep only one unit with or without a decimal in any measurement or account

The metric system has been adopted in almost every country throughout Europe, in South America, and Mexico It is used in the United States Army Navy, and Public Health Departments It is the basis of the British Electrical System is used in all science work and is required to be taught to scholars by our Educational Code It was legalized in England by Act of Parliament in 1896 and in 1904 the House of Lords passed a Bill to make it compulsory In 1907 a similar Bill was introduced into the Commons, but was defeated by a small majority of ignorant objectors, whose assertion that the system had hopelessly broken down in France was subsequently refuted in a report of the Standard Department of the Board of Trade

If England would enact the compulsory use of metric weights and measures they would become universal throughout the world (See DECIMAL COINAGE) G M

MEUMANN, ERNST — Born on 29th Aug, 1862, he began his professional life as private lecturer on Philosophy at the University of Leipzig, was called to the University of Zürich as assistant professor, and, in 1900, became full professor at the same institution In 1905 he was appointed to the Prussian University of Königsberg, where he remained until 1907, when he was removed to Münster in Westphalia There he stayed two years, passing in 1909 to the University of Halle Next year he became Professor of Philosophy and Pedagogics at Leipzig and in 1911 he was appointed Professor of Philosophy at Hamburg This position he occupied until his death on 27th April, 1915

Professor Meumann's best known works are as follows—

1 *Haus u Schularbeit Experimente an Kindern d Volksschule* (Home and School Work, Experiments on Children of the Primary School) Leipzig Julius Klinkhardt 1904

2 *Ökonomie u Technik des Gedächt* (The Psychology of Learning) 1903

3 *Entstehung d Ersten Wortbedeutungen beim Kinde* (Genesis of the Earliest Word meanings of the Child) 1902 now in its second edition

4 *Die Sprache des Kindes* (The Child's Speech) 1903

5 *Vorlesungen z Einführg i d Experiment Pädagogik* (Lectures on the Introduction to Experimental Pedagogy) published first in two volumes, 2nd ed (1911) in three volumes, Leipzig Wilhelm Engelmann

6 *Einführg i d Aesthetik d Gegenwart* (Introduction to Present-day Aesthetics) 2nd ed (2 vols), 1911

7 *Intelligenz u Wille* (Intelligence and Will) 1908 2nd ed (2 vols) 1913 Leipzig Quelle u Meyer

8 *Abriss d Experiment Pädagogik* (Outlines of Experimental Pedagogy) Leipzig, Engelmann 1914

Meumann was also for many years co-editor of the *Archiv f d Ges Psychologie u d Ztschr f Experim Pädagogik* and of the *Ztschr f Pädagogische Psychologie u Experiment Pädagogik* To both of these journals he made many valuable contributions

Works in English. Up to the present, only one of his works has been translated into English The *Ökonomie u Technik des Gedächt* appears as *The Psychology of Learning an Experimental*

Investigation of the Economy and Technique of Memory The third and last German edition has been translated by John Wallace Baird, Professor of Experimental Psychology Clark University Meumann himself wrote a Preface

Dr Rusk, in his *Introduction to Experimental Education* (Longmans) states that his book is based on Meumann s *Vorlesungen* and it is certain that for some time any work on Experimental Pedagogy will have to draw largely upon this compilation This great work contains the most complete account up to the present of educational research work it records the results attained the experimenters inferences and the inferences which Meumann himself considered legitimate It indi cates, too, the directions in which the results may be usefully applied to school practice Nearly all sides of educational work and its conditions are treated—mental and physical development class and individual differences general and special training thought memory imagination feeling and will, intelligence and, throughout these sub jects are dealt with not from the theoretical or purely psychological, but from the practical peda gogic point of view No student of education can afford to ignore this book which it is to be hoped will soon be available in an English translation

Meumann and Experimental Education. Professor Meumann was by far the most prolific and opti mistic German writer on experimental pedagogy He admitted that at present it would be incorrect to speak of systematic pedagogics owing to *lacunae* in our knowledge but he looked forward to a time not far removed when pedagogy would take rank as a scientific system Pedagogy he said after centuries of neglect has now begun to take its proper place as a practical science The days are past when contributions to educational theory were the occasional essays of philosophers like Locke Kant or Fichte Equally are the days past he thinks, when these were left to insufficiently edu cated practical men Even Herbartian theories founded as they were upon the psychology and ethics of the time, and unassisted by the develop ments of the sciences bearing upon education must receive their confirmation or condemnation from the infant science of experimental pedagogy That Meumann s mind was open to new ideas and quick to estimate their value there is proof in the fact that in 1902 he knew almost nothing of the experi mental work then being done among pedagogues He was soon convinced that the future of education lay with this He had little inclination to discuss theories, because he was convinced that the crying need was for research and positive results—research to be carried on by trained men in psycho peda gogical laboratories in collaboration with psychologists He demanded the establishment of peda gogical chairs at universities and schools in which to experiment but saw little likelihood that in Germany such demands would be conceded The greatest pedagogic movement of all time he says has arisen without the help of educational administrators, and it appears that it must in the future continue to depend entirely upon private initiative

Meumann's writings have done much to consolidate experimental pedagogy as a science, notwithstanding the discouragement of great experimental psychologists like Wundt Meumann excels in his analysis of a problem in the way he reduces it to its elements and suggests methods of research His own experiments were not always carried out as scientifically as was possible, his statistical treatment was often open to criticism and hence his conclusions were sometimes unreliable As a result of the same attitude of mind, he accepts, perhaps too readily, the conclusions of other experimenters, and suggests practical applications of unconfirmed principles There is little doubt however that his work has suggested lines of research in many fruitful directions

Professor Meumann was a very energetic and practical character and always handled real living issues Such questions as the teaching of sex hygiene in the schools co education, literary and artistic appreciation among school children, their ethical development, and a multitude of others, he treated with rare acuteness and suggestiveness At the time of his death he was engaged in a piece of research work in sex psychology which in conjunction with similar and independent work proceeding in England gave promise of rendering valuable service in throwing light upon this vital problem His writings are remarkable for clarity of ideas and expression W G S

MEXICO, EDUCATIONAL SYSTEM OF —The educational systems in operation in Mexico at the present day may be strictly speaking reduced to one—the *official* system, because although the Mexican Constitution establishes the principle of liberty of teaching such liberty has in reality never existed owing to the monopoly which the State possesses of granting diplomas and to the super vision which the State exercises over private colleges

The Central Government determines the nature of the education in the two territories and in the Federal District, and the local government of each State determines it in its own district

Though each State possesses independent legis lative power education in all the States has the same fundamental character, and may therefore be said to be one and the same in the whole Republic

Education in Mexico consists of three grades Primary Preparatory and Professional Primary education is divided into Elementary and Superior

Primary Education Elementary education in the whole of Mexico possesses these three characteristics (1) It is *compulsory* for all children from 7 to 12 years of age, (2) it is wholly *gratuitous*, that is to say parents neither pay fees nor have to pur chase books or apparatus (3) it is *secular* that is to say independent of all religious doctrines Its duration is four years From the intellectual point of view its aim is to give the pupil a connected idea of what the world is and the nature of society and of man the whole on a positive basis, morally it aims at inculcating in children the conception of duty and the pleasure derived from its performance physically it seeks to achieve the harmonious development of the organism and the preservation of health At the present time it would only be misleading to give any statistics relative to the number of elementary schools in Mexico they may be roughly estimated at about 10 000 The revolutionary Government is energetically pushing forward elementary education throughout the republic and when the whole country has been pacified, it is beyond doubt that an efflorescence of elementary education will take place as indeed has already happened in some States—Yucatan for example

Superior primary education lasts for two years, and schools where it is imparted are only to be

found in centres of importance In some States, superior primary schools exist only in the capital city Superior primary education is complementary to elementary education in all its branches, and forms the compulsory bridge that connects with the preparatory schools the military schools, the commercial and trade schools, the schools of the fine and industrial arts and agricultural and veterinary colleges

Preparatory Education is in operation in the majority of the States of the Republic, and in the Federal District In some places it lasts for four years, in others, for five

The system of preparatory education which obtains in Mexico was established in 1868, and is unique in the world It is scientific synthetic, and encyclopaedic It is the only system which fully satisfies the two fundamental conditions which modern civilization demands for the solution of the problem of superior education—*how to harmonize opinions and to prepare a man worthily to command or nobly to obey* Preparatory education is positive and endows the student with a complexus of positive knowledge concerning the world society and man s position in society Preparatory education is com pulsory for all who desire to pursue a professional career such as medicine engineering law archi tecture pharmaceutical chemistry dental surgery agriculture etc Up to the present year it has been gratuitous as all education has been in Mexico since 1916 a fee of five dollars monthly is payable

Professional Education Professional or special education is provided only in a few States of the Republic and in the Federal District Few States afford medical training and none engineering which is only provided for in the city of Mexico The training lasts for four, five or six years according to the profession chosen Professional education is organized scientifically and systematically It was gratuitous up to 1915 since 1916 fees amounting to five dollars monthly are payable

In addition to the four branches of education already described, the State provides agricultural and veterinary, naval and military industrial and artistic and commercial education Schools for the blind and for deaf mutes also exist

In all professional schools education is both theoretical and practical Students of medicine for example practise in the hospitals maintained by public charity or in those maintained by the State

Defects may be found in all Mexican schools In some the buildings are inadequate in others the staff is the trouble, and in these the means of education are deficient Plans of study commonly vary with changes in the Government and it may be affirmed that certain subjects (*e g* philosophical studies) are qualified by the opinions of the person who controls public education, for instance if the director is an agnostic the agnostic philosophy will be taught in the Government schools

Outside official education in Mexico, there only exists the primary education given in some private colleges (always however subject to the official curriculum) and that of the Catholic ecclesiastics The triumphant Revolution of 1910–1916 has closed all the Jesuit colleges and all others that had any relation with the religious Orders and associations

The Great Revolution in Mexico, which as a happy consequence resulted in the separation of Church and State, facilitated, by its triumph in 1867, not only the establishment of republican institutions, but also secured the foundation of a genuine and far-reaching system of public education, which, however, had to endure all those disturbing influences that everything subject to State control has to submit to There being no other organized power in Mexico than that of the State, education in Mexico is subordinated to the State

There are grounds for the hope that the educational systems of Mexico—primary education above all—may receive throughout the whole Republic a vigorous and sustained impulse when the country is pacified after the gigantic social revolution which has distracted it since 20th November, 1916 The Mexican nation will then enter the path of true progress A A

MICHAELIS, MADAME —An ardent follower of Froebel who came to England in 1874, after considerable kindergarten work in Switzerland and Italy Soon afterwards she was appointed to lecture to the School Board teachers at Croydon In co operation with Miss Doreck (president), Miss Heerwart Professor Payne and Miss Manning, she instituted, in 1874 the Froebel Society and with Mrs Berry she founded in 1875, the Croydon Kindergarten and Preparatory School For some years she was head mistress of the Croydon School and a member of the Council of the Froebel Society

In 1891 Madame Michaelis left Croydon to open a Training College for kindergarten teachers at Notting Hill The Croydon Kindergarten Company was then dissolved having in her own words, 'provided worthily for the continuation of its work'

Among her literary works are a faithful translation of the German edition of Froebel s letters published in 1887 and a translation of the autobiography of Friedrich Froebel both works were completed and annotated in co operation with H K Moore

MICROCEPHALY —(See MENTALLY DEFICIENT CHILDREN)

MICROSCOPE IN SCHOOLS, THE.—For all elementary work such as Nature study with large classes a "simple" microscope (pocket magnifier) is probably the best Perhaps the most useful pattern is the "watchmaker's eyeglass," which allows the pupil to use both hands in manipulating or dissecting specimens Very little practice is needed in acquiring the art of holding the eye-glass in the eye without fatigue or discomfort or it may be held in a ring at one end of a piece of wire, the other end of which is wound round the neck of a bottle filled with shot or earth to increase stability The cost of these watchmaker's eyeglasses is one shilling each and their magnification is 5 A rather more expensive instrument is the triplet folding pocket magnifier whose lenses, separately, give magnifications of 6 7, and 8 respectively, but, when combined, of 12 14 and 18 Its cost is three shillings and sixpence Thus no serious outlay is required to provide say, two dozen of either or both of these for class purposes

Compound Microscopes. For elementary classes, the compound microscope is rarely needed When it is required the teacher provides the preparations to be examined, sets out a few microscopes, and allows a few pupils at a time to go to them while

the rest are occupied with some other work A more satisfactory method is to employ a microscope attachment to the optical lantern, and thus demonstrate directly the points to be observed This however, involves considerable expense and the means of darkening the room With upper forms however, and for those who are specializing in science, the compound microscope is an essential part of the equipment and it is therefore necessary to consider the type and number of instruments required The ideal number is one microscope for each member of the class this may be realized in a few years by the purchase of a few instruments at a time The type should not be over elaborate but strong and simple, it is economy to put money into the stand and to add lenses later as opportunity allows The stand should be provided with both coarse and fine adjustments, and the pupil should be made to understand the action of these so that he may handle the instrument with proper care One eyepiece is generally sufficient, fitted if possible, with a "squared" measuring glass (eyepiece micrometer) so that pupils may gain an idea of the actual dimensions of the objects examined When fully equipped there should be two objectives to each microscope ($\frac{2}{3}$ in and $\frac{1}{6}$ in are the most generally useful, and quite adequate for school purposes), and if to these can be added a revolving nosepiece, there is a great gain of time and a diminution of risk of injury to the lenses The cost of an instrument thus fitted is about £6 6s though very serviceable microscopes can be obtained at considerably less cost

Use of the Instrument It is very necessary to instruct pupils in the art of using the microscope otherwise disastrous injuries to expensive things are bound to occur Points to be insisted on are (1) Never focus downwards with the coarse adjustment while the eye is looking through the eye piece, but with the eye level with the stage move the objective down until it nearly touches the cover glass, then look through the eyepiece and slowly focus *upwards* until the right position of the objective is obtained (2) never lift the instrument so as to throw strain on the fine adjustment appliance (3) never touch the lenses with anything hard or harsh if the lenses require cleaning they should be carefully wiped with a very soft clean leather (4) use as small an opening in the diaphragm as is consistent with satisfactory illumination Also for the pupil's own comfort he should (1) keep both eyes open while looking down the microscope (2) use the left for the microscope and the right for the note-book (3) sit on a stool sufficiently high to allow the microscope to be used without strain to the neck and keep the instrument away from the edge of the desk

Some training in elementary technique is necessary Even in such a simple matter as cleaning the glass slides and cover slips accidents are abundant unless the right way has been shown viz apply pressure to both surfaces simultaneously with the leather held between finger and thumb Again, the proper mode of lowering a cover slip on to the specimen so as to exclude air bubbles must be demonstrated Pupils should be taught how to cut and stain sections of preserved specimens, but it is sufficient for them to mount their preparations in glycerine or some temporary mountant They should know and understand the method of permanent mounting in balsam and the antecedent dehydration, but this, and also the cutting of paraffin-imbedded specimens, involves the expenditure of more time than can be spared from school hours, and leads to much self-deception on the meaning of work and industry The stains should be few the purpose of each clearly understood and no stain should ever be used except with the express intention of producing a definite result

Note —Pre war prices are quoted throughout this article O H L

MICROSCOPICAL SOCIETY, THE ROYAL — This Society was established in 1839 and incorporated by royal charter in 1866 Its aim is the promotion of microscopical and biological science by meetings at which communications are received and papers are read and discussed The Society publishes its transactions in its *Journal* which contains accounts of its observations and discoveries relating to improvements in the construction and mode of application of the microscope or to biological or other subjects of microscopical research

The Fellows of the Society are ordinary honorary, and *ex-officio* Fellows

A person desirous of becoming an Ordinary Fellow must be personally known to at least one existing Fellow and must be recommended by three Fellows as a person attached to scientific pursuits The admission fee is two guineas and the annual subscription is two guineas The Honorary Fellows limited to fifty in number are persons eminent in microscopical or biological science and are elected on the recommendation of five Ordinary Fellows *Ex officio* Fellows are presidents of societies having objects wholly or partly similar to those of the Royal Microscopical Society and must be recommended by ten Ordinary Fellows The number of *ex officio* Fellows is limited to 100

Meetings are held monthly, and the proceedings consist of the reading of papers the exhibition of microscopical apparatus and objects lantern demonstrations and discussions Additional meetings are held twice a month during the session for the purpose of discussions on biology (including histology bacteriology and pond-life) on microscopical optics and microscope construction

The Society s rooms are at 20 Hanover Square, London W 1 and include a reference and lending library an extensive collection of instruments and apparatus and a collection of type slides The rooms are open to Fellows each weekday from Monday to Friday inclusive Fellows residing at a distance may borrow books through the post

The *Journal* is edited by a member of the Council and is published in alternate months from February to December It is sent free to all Fellows and sold to the public It contains the transactions and proceedings of the Society, with a summary of current researches relating to zoology and botany contained in the leading scientific journals of the world The *Journal* is of interest to those who are anxious for the perfection of the microscope to demonstrators and students (especially of bacteriology physiology dentistry mineralogy, and brewing) and to workers in every branch of medical and biological science

MIDLAND ADULT SCHOOL UNION, THE.— (See ADULT SCHOOL MOVEMENT, THE)

MILETUS, EARLY ENDOWED SCHOOL AT.— (See ENDOWMENT OF A FREE SCHOOL AT MILETUS BY EUDEMUS)

MILITARY EDUCATION.—When a recruit joins the Army, he is put into a barracks and handed over for a number of hours a day, according to a time-table, to a drill sergeant a gymnastic master, and a musketry instructor The drill sergeant teaches him how to stand according to the rules of a book issued by authority, in which every position and movement is precisely described and depicted, which lays down the law as to how he is to place his feet and to hold his knees his thighs his shoulders, his chest, his head, his arms, and his hands The position so described is that of attention and two other positions follow for standing at ease and for standing easy By the same strict method he is taught to turn and to salute an officer and after that to march—in other words how as a soldier he must walk When he has been accustomed to stand and move according to the pattern, he becomes one of a squad which is constantly drilled for many weeks with and without arms The squad in time becomes part of a platoon which is in turn similarly drilled until it is fit to take its place with three other platoons in a company These drills are continued until it has become each man's habit or second nature to stand and to move according to the pattern The result is that the 200 men of the company move together at the word of command as though they were a set of mechanical pieces all exactly alike At an early stage in the process to which about four months are devoted the recruit is given a rifle which he is taught to carry and to handle also according to pattern The mechanism of the rifle is explained to him and he learns to take it to pieces and to put it together again He is taught the theory of the bullet s flight and learns to aim and to judge the distance of objects Then he is taught to shoot in many lessons and to dig to make trenches and embankments He spends many a bad quarter of an hour in bayonet exercise Every day too, he has to make his own bed, to do his share of cleaning the bedroom to keep clean his rifle and his clothes (for he has been put into the King's livery), and his accoutrements He finds in the regiment a tradition of behaviour to which he has to conform for if he violates the unwritten code his life will be made a burden to him

The first months of a recruit's life are apt to be exceedingly irksome He is puzzled to feel himself treated, now as a schoolboy now as a menial and always as a slave But after a few months he becomes aware that a change has taken place in him, he finds himself a new man He begins to take a pride in his regiment and a more chastened pride in himself He has passed through the primary stage of military education

Education has three-aspects it means learning to know, learning to do, and learning to conduct oneself All three are covered by the word discipline which is unfortunately too often used, especially in the Army, as though it were merely equivalent to obedience In the recruit's training there is a development of intelligence greater than is at first sight apparent In direct lessons, he acquires a knowledge of his weapons and of the simpler actions of his calling But without lessons, from mere contact, he becomes acquainted with a social organization his regiment, and with the idea of co-operation The technical knowledge gained is transmuted into skill or power, and the habits acquired from drill, together with the ordered life in a regulated community, strengthen the will and form the character

The training of the private soldier deserves more attention than it has received from students of education because it almost always succeeds in putting a permanent stamp on the man who undergoes it, because its lessons are thoroughly learned, and because it employs the most effectual means of producing a desired type of character—a life in common

The Training of Officers. The secondary stage of military education is the training of officers As the officer should be the teacher and leader of his men, he ought to surpass them in strength of character, in breadth of outlook and in knowledge The attempt is made to secure these qualities by requiring from candidates for commissions evidence of good breeding and of general education The school which forms an officer is his regiment, in which he learns his military duties by performing them under the instruction and supervision of his superiors and in which his character is moulded by his association with his comrades An officers' mess is a kind of club of which membership imposes a standard of conduct

A certain amount of military instruction is usually given to young officers before they receive their commissions In the British system cadets are normally sent either to the Royal Military College at Sandhurst for the infantry and cavalry, or to the Royal Military Academy at Woolwich for the artillery and engineers At these colleges, the school instruction of the pupils in modern languages and at Woolwich in mathematics and chemistry, is continued and lessons are given in topography tactics fortification, military law and administration, and the outlines of military history Candidates for commissions who pass through neither of these colleges are required either to serve for a time as officers of the Special Reserve or to take a degree at one of the universities, and in either case to pass an examination in tactics, topography, and military history

Thus an officer on his first appointment has usually received the rudiments of professional instruction But it is only in his regiment that his real training begins for it is only there that knowledge is transmuted into action Military law and military administration are matters of routine susceptible of no theoretical development, and are best learned by practice An officer's relations with his men are a matter of tact and of the experience acquired in the course of regimental life The officer's true professional work, his function in war, is that of a tactician, and the main business of military education is to make the officers of an army into tacticians Napoleon said that an ideal army would be one in which every officer knew exactly what he ought to do in any situation in which he might find himself during the course of a campaign To realize this ideal is the main purpose of the instruction of officers

Every War Office issues a number of training manuals in which are described the methods adopted by the Army for the conduct of every kind of military operation, from the drilling of a recruit to the movement of an army corps and its handling on the battlefield Each of these manuals is constantly revised so as to be, as far as practicable, an exposition of sound principles and of the best methods The young officer is expected to make himself well acquainted with these books, of which

the most important are *The Field Service Regulations*, the *Training Manuals* for infantry, cavalry, and artillery and the *Musketry Regulations*

The principles and methods thus learned are applied in manoeuvres in which one party is pitted against another, so that the officer commanding each is confronted by the will and intelligence of an adversary Thus the officer commanding either of the two sides must begin by an effort to appreciate the situation must then think out for himself the best way of fulfilling with the troops at his disposal the mission either prescribed by the orders he has received or divined by himself from the situation His mind made up he must translate his resolve into orders and see that those orders are properly carried out Finally he should make a report to his superior giving an account of the operation he has conducted

Sham Fights In war the weapons are used to kill and maim the enemy and the decision is caused by their effect But in a sham fight the weapons cannot be used nor the enemy injured The decision is therefore given by umpires whose action consists in making the best guess they can at the damage which if shells and bullets had actually been fired or if cold steel had been used would have been inflicted, and in deciding according to the best of their judgment whether a body of troops fired at or charged would be able to hold its ground or to continue its advance or would be obliged to fall back Subject to these decisions of the umpires commanders in manoeuvres are free to dispose of and move their troops at their discretion

The habit of command has to be acquired by practice and is not easily developed in middle life In a good army therefore officers are early accustomed to exercise authority and given as many opportunities as possible of acting on their own judgment A captain for example is encouraged to manage and train his company in his own way without interference from his seniors The most effectual way of developing an officer's power of thinking and acting for himself of quickening and ripening his judgment and of inuring him to make up his mind quickly and rightly is the constant practice of commanding his unit against an enemy It should be begun as early as possible in an officer's career and carried on unintermittently as long as he remains in the service

A sham fight with imaginary troops can be fought by two officers on a map provided they have the assistance of a third to set the situation and to act as umpire This practice known as the war game (*Kriegsspiel*), is cultivated in all European armies

A group of officers may conduct imaginary manoeuvres without troops over any tract of country accessible to them and imaginary manoeuvres of this kind known as staff tours form a normal part of the training of officers

An officer reading the history of a campaign may at any point put to himself the question Supposing I were commanding this army or this division, and found myself in the situation which the historian here describes how should I have acted and what orders should I have given?" If he then sits down and writes the orders which he thinks appropriate to the situation, he will not only have worked out his own solution of a definite problem but will find himself as he goes on with the book much more keenly appreciating the difficulties of the general about whom he is reading and the significance of the orders which the general actually gave This method of treating a military history as a series of problems to be solved by the reader is the most profitable plan for self-education in the art of command

In recent years, tactical instructors have adopted the practice of setting problems on a map to be worked out by the students the solution always taking the form of a written order for the body of the troops of the side which the student is supposed to command

Higher Military Education. The higher military education is the training of generals and staff officers It consists mainly in the practices already described for the acquisition of tactical judgment and skill The higher the officer's rank and the larger the unit with which he is concerned the more he has to do with strategical considerations and to look at the general framework of the campaign and the connection between one set of operations and another The principles of strategy must be studied in the first instance in theoretical works such as Jomini's *Précis de l'Art de la Guerre* the three volumes of Clausewitz *On War* or the *Operations of War* by the late Sir Edward Hamley A grasp of the theory prepares the student for the study of campaigns and it is only by the study of campaigns—in histories based upon the original documents (*i.e.* substantially upon the correspondence of the commanders with their Governments and their generals)—that a working knowledge of strategy can be obtained

The study of generalship is little else than that of past campaigns for which in modern times there is abundant material, as every general staff publishes full accounts of the wars in which its own army has been engaged and reproduces in them the documents needed for a full understanding of the decisions taken by the commanders The study of a campaign can during peace be usefully supplemented by a visit to the principal battlefields for the story of a battle can hardly ever be perfectly followed without some acquaintance with the ground on which it was fought and even the best map fails to give as good an idea of the scene as will be obtained by a day or two spent on the spot The study of campaigns should go hand in hand with practice in the art of command without which it is difficult to maintain the habit of decision Accordingly in modern armies general officers are given as many opportunities as possible of commanding their units in annual manoeuvres

Apart from the actual command of troops every modern army possesses a high school of war for the training of staff officers The British Army has its Staff College at Camberley and a sister Staff College at Quetta for officers of the Indian Army In France the corresponding institution is l'École Supérieure de la Guerre in Germany the War Academy at Berlin To these colleges are admitted officers of a few years service selected by competitive examination The subjects of study are tactics military history, fortification topography and military geography military law and administration together with modern languages and certain branches of natural science The course lasts for two or three years and concludes with examinations and other tests by which the capacity and attainments of the officers can be gauged

The general staff of an army is the office in which the commander-in-chief or the officer destined to be his confidential assistant carries on

the preparation of plans of campaign, keeps in touch with the progress of other armies and of the military arts and sciences and prepares histories of campaigns Employment in it is considered a specially valuable training Those staff officers who are attached to generals commanding and act as their confidential secretaries or assistants necessarily obtain considerable insight into the working of the larger units and the mechanism of command

The British Army possesses a school of musketry at Hythe to which officers and non-commissioned officers are sent for special courses, of a few weeks' duration in the principles and practice of rifle shooting There are also schools of cavalry, of gunnery and of military engineering as well as an Ordnance College of which the purpose is to instruct a number of officers in the principles of gun construction S W

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MILL HILL SCHOOL —From 1662 onwards the public schools and universities were barred against Nonconformists But the ejected ministers of 1662 became private tutors and opened schools and one of them Rev Richard Swift conducted an academy at Mill Hill until 1701 The present school of course is not a direct outcome of this It was founded by Dr Pye Smith of Homerton College assisted by other founders some connected with the British and Foreign Schools Society as a Protestant Dissenters' Grammar School " in the year 1807, though intended primarily for Non conformists who were excluded from the Anglican public schools by the religious test that was still imposed the views of the school were by no means narrow and many Churchmen of evangelical opinions sent their sons there to be educated one old boy indeed even became a bishop—Dr Jacobson of Chester Among former head masters under whom Mill Hill flourished were Priestley, who ruled from 1835 to 1853 and the Rev Philip Smith brother of Sir William Smith the learned compiler of so many dictionaries The present head master Sir J D McClure has governed the school since 1891 he found sixty one boys in attendance—the roll contains now nearly 300 Sir J A H Murray the lexicographer was an assistant master from 1870 to 1885 and left Mill Hill for Oxford only to undertake his magnificent work

The school is situated on high land more than 400 ft above sea level in grounds of nearly 70 acres The hill faces Harrow Hill, and is at about the same distance from London viz 10 miles There are three divisions in the school—Upper, Middle and Lower—the two first being divided into Classical and Modern Srdes A good deal of attention is given to French and German The buildings include chapel, gymnasium, swimming bath, carpenter's room, laboratories sanatorium and fives courts There are ten entrance scholarships ranging in value from £15 to £80 per annum, and nine leaving scholarships from £15 to £70

MILL, JAMES (1774–1831) —A native of Mont rose, Scotland, and educated at Edinburgh University, where he specialized in Greek and Philosophy Later he became a tutor in the family of Sir John Stuart in London Although in later years his official post was with the East India Company, a good deal of his time was devoted to literature and philosophy His *History of British India*, published in 1818, was recognized as a great literary work and was instrumental in bringing about drastic changes in the government of India Among his other works are *Elements of Political Economy Prisons and Prison Discipline Colonies Laws of Nations* and *Education* and *An Analysis of the Human Mind* The peculiar system of education he applied to his son, John Stuart Mill (*q v*) marks him as an educationist of much individuality

MILL, JOHN STUART.—Philosopher and economist and one of the greatest thinkers of the nineteenth century, was born in 1806 and lived most of his life in London He was the eldest son of James Mill (*q v*) the historian of India, who had peculiar ideas in regard to the education of the young and brought up his son in accordance with these until he was 14 years of age Himself distinguished in Greek and philosophy, the father began teaching Greek to young John Stuart at the age of 3 and at 8 the boy had read in the original a number of Greek classics and serious volumes of history, such as those of Gibbon and Hume When he was 13 his activities embraced the study of Adam Smith and Ricardo Part of his education consisted in attending discussions on philosophy and politics, where his father and such other learned men as Jeremy Bentham, Joseph Hume and David Ricardo were the speakers Probably this rigorous training led to the serious mental breakdown from which he suffered about his twentieth year and which necessitated a period of rest and travel In 1822, he entered the East India Company in which he worked for thirty five years finally holding the responsible post of Chief Examiner of Political Correspondence, previously held by his father He still continued his philosophical pursuits and commenced giving his views to the world at an early age A feature of his education was the insistence of his father that nothing should ever be accepted as a truth until the evidence regarding it had all been collected and weighed Consistently with this, he was brought up without having any religious belief In 1827 he edited and annotated Bentham's treatise on *The Rationale of Judicial Evidence* From 1837-1841 he was the proprietor of *The London and Westminster Review* to which, also, he was a regular contributor His *System of Logic*, which held that all reasoning is fundamentally inductive and sought to establish a new theory of the syllogism, aroused a great deal of controversy and not a little adverse criticism, but it soon became recognized as a classic

A volume of *Essays on some Unsettled Questions of Political Economy*, published in 1844, was followed four years later by the now classical treatise, *The Principles of Political Economy*, which clearly reflected the teaching of Ricardo For some time after this, his duties at the India Office claimed his sole attention, and it was not until 1859 that the first of his later writings appeared In this later series are such works as *Auguste Comte and Positivism, The Examination of Sir William Hamilton's Philosophy* and his essays on " Nature," " Religion," " Liberty," and " The Subjection of Women." In the last named treatise

he insisted on the intellectual and political equality of the sexes and on the right of women to equality with men in all respects He advocated a generous education both in classical and scientific studies, but excluded modern languages and literature as possessing little educational value He died at Avignon in 1873

MILLINERY, THE TEACHING OF.—Never in history has there been a time when the question of what to wear on the head has not received a great amount of attention from both men and women Certainly no subject appeals more to the feminine mind and when its purpose is to be devoted to the personal adornment of the worker a teacher of millinery finds little difficulty in obtaining and retaining the interest of her pupils in their work This point alone makes millinery an easier subject to teach than many others

In considering the importance of millinery as an item in the education of girls the industrial economical and artistic aspects of the matter must be kept in view The industrial value may be assessed when it is borne in mind that girls can be trained so that they can adopt millinery as a profession which is a lucrative one and not nearly so laborious as some others During the last two or three years the conditions under which this trade is carried on have greatly improved Working hours are shorter overtime is paid and the scale of wages raised The economical value consists in the fact that the home milliner can obtain excellent results by utilizing material that may chance to be at hand or by tastefully renovating or re modelling a hat that has already seen some service Even if materials have to be bought much better value can be obtained for the money spent than by purchasing a ready-made hat In this age, the saving is of considerable importance The artistic value is surely self evident harmony of form and colour is the result of trained observation and the student should gradually acquire this knowledge, especially as it concerns herself

There is no doubt that the training of a good milliner should begin early The first lessons should come while the girl is at school not as millinery but by emphasis of such points as neatness of workmanship cleanliness of production cost and relative value of materials etc The false economy of elaborate work on poor material and the elements of artistic taste can be inculcated there and a good general foundation be laid for the millinery teacher to work upon later

Millinery teaching is conducted chiefly in trade schools or in evening classes held at polytechnics or county council institutes At the first named the girls are trained to be practical milliners they attend for two years and are taught by persons who have had considerable experience in the West End of London and other centres of high-class work The method of teaching is similar to that which would be employed in an actual workroom That this method is eminently suitable is shown by the fact that the pupils are afterwards placed in business houses without having to go through the apprenticeship stage At the polytechnics or evening institutes, the teaching is more calculated to meet the needs of the home milliner, and is, therefore, not quite so far reaching It is this side of the question that is more particularly dealt with here

When about to take a class in millinery, it would be well for the teacher to find out as much as possible about the age and social position of her students, so that she may have some idea of how to adapt the lessons to their requirements This is an important point if the teaching is to be successful as styles and methods of teaching which work well in one district are quite unsuited to another locality The syllabus should be made as interesting as possible, but, at the same time, its educational value must not be lost sight of Many inexperienced teachers make the mistake of allowing students to work too much at the part of millinery that pleases the eye, before a proper groundwork has been laid

A course usually consists of about twelve lessons one per week, and a student may attend for two consecutive courses in one year The best method of grading the work in the two courses would be as follows—

COURSE I

Simple shapes in both Espartra and wire covering them plainly in velvet or piece material Simple trimmings such as bows made from ribbon and piece material Mounting and attaching bought flowers

COURSE II

Here the shapes can be elaborated and simple blocking taught, more advanced methods of covering all kinds of trimmings, including silk flower making being introduced

It is also very useful to teach the students some children's millinery

If worked thus even if a student is unable to attend a further course she will have sufficient knowledge to construct both a winter and a summer hat on simple lines

Equipment The room must be large enough to accommodate the students comfortably The lighting must be good and not too high up The requisite tables should be provided it is impossible to attempt millinery on ordinary schoolroom desks

Good cupboards are necessary for storing unfinished work and materials A blackboard is essential and a small gas ring where an iron can be heated is an advantage Tools such as nippers, scissors etc must be of good quality and sufficient in number

In London all these things are usually provided, but in outlying districts and in the country it is sometimes not realized that any extra provision for these classes is needed, and it is difficult to obtain the proper equipment In such cases the teacher must bring her ingenuity to bear upon the matter and suggest certain contrivances until such time as the proper things can be procured For instance if the desks happen to be flat at the top, two may be backed together, thus making a fairly satisfactory table if the tops are sloping planed boards can be laid across the tops, and a stiff paper cover put over them A substitute for a blackboard can be found in brown paper or a blacked millboard.

The Teacher The teacher must be enthusiastic, so much so, that she is able to convey her own love of this fascinating subject to her class

She must be of stylish appearance Young girls are very apt to copy the teacher in this respect, and if a good copy is set, it will influence their taste when lessons are finished and they are no longer under her guidance In order to train the observation of the students as to what is "good style" at the moment, it is a good plan occasionally to have short discussions about what has been

seen at the best shops, this will interest them keenly, especially if they are taught to adapt to their own use what they have seen

A most important part of the equipment of the teacher is blackboard drawing This is absolutely essential all parts of millinery may be easily illustrated in this way, indeed, it is the only effectual way of teaching a large class the elementary processes Certain prepared diagrams on brown paper, such as large sketches of hats indicating the types which may be made during the course, are also of value but it must be borne in mind that diagrams which are prepared beforehand are not nearly so helpful as those which are built up in front of the class

Demonstration apparatus is clearly part of the teacher's equipment and no class teaching can be carried out without it It is best that this should be made as required for each lesson so that the difficulty of storage may be obviated

Unlike those required in teaching many other subjects the materials which can be used for demonstrating millinery processes are quite inexpensive such things as leno mercerized lawn and soft paper form excellent media for illustrating all kinds of trimmings, and stiff book muslin buckram and blocking wire may be used for the lessons on shape making

Whenever possible parts placed together should be of contrasting colours and the colour of the thread used for securing the parts should also differ thus students seated as a distance may quite easily follow the process which is being demonstrated All this apparatus must be large otherwise it is of no value

In addition to the foregoing the teacher must possess finished specimens of most of the processes and made trimmings so that a proper standard of work may be set These of course will have to be supplemented from time to time as the wheel of fashion revolves and new methods become necessary

In conclusion, a word as to the actual presentation may not be out of place

The first and most important point to emphasize is that a proper sequence be planned and adhered to The demonstration should be clear and impressive, and run concurrently with the practice Notes should be formulated during the lesson

If these suggestions are carried out, the teaching will be successful, and the result to the students will be growth of good taste and ability to create hats that will serve all useful purposes, and be a pleasure to contemplate both for wearer and onlooker W S

MILTON, JOHN (1608–1674) —Was the son of a scrivener also John Milton and was born at the house with the sign of the *Spread Eagle* in Bread Street, Cheapside, London The father composed many musical tunes, songs, and airs It was, doubtless from his home-life that Milton learnt to value music as an educational recreation for the "travailed spirits of the scholar" The son was placed under a tutor of Presbyterian views, Thomas Young, who had been curate to the scholar, Thomas Gataker, of Rotherhithe, and *c* 1620, whilst still retaining Young as tutor, Milton went to St Paul's School, and became a pupil of Alexander Gill whose usher was his son, Alexander Gill. The elder Gill was the author of *Logonomia Anglica*, an English grammar, written in Latin with examples from English poets, especially Spenser

In 1625, Milton was admitted a pensioner of Christ's College, Cambridge, in his seventeenth year In 1627, he was "sent down" for some college offence, but took his degrees of B.A. and M A (1632) in the regular course, at the earliest possible date He gave up his original idea of becoming a clergyman, and for five years lived in the house to which his father had retired at Horton in Buckinghamshire and there "enjoyed a complete holiday in turning over Latin and Greek authors" At Horton he wrote *L' Allegro*, *Il Penseroso* *Arcades* *Comus* and *Lycidas* From 1637–1639 he travelled abroad In 1639 he took lodgings in St Bride's Churchyard Fleet Street, and thence removed to a 'garden house" in Aldersgate in 1640, and in 1643 "commenced schoolmaster to the sons of friends

Edward Phillips Milton s nephew and one of his pupils gave an account of the studies in Milton's school as it is supposed to have continued from 1640 to 1646 Masson computes the number of pupils from eight to twelve The subjects taught were Latin Greek Hebrew Chaldean, Syrian, Italian and French and the several arts and sciences and whilst he endeavoured to arouse an interest in practical affairs (*e g* in agriculture architecture and even in military science), the text books used were for the most part if not entirely in Latin or Greek All this was attempted by the age of 15 to 16 years of age

Samuel Johnson speaks of Milton's school as "the wonder working academy in Aldersgate Street but it is the most obvious of criticisms to apply to Milton to say that in his school he entirely over estimated the power of ordinary boys and youths as he did in the tractate

The Tractate of Education. Milton's tractate *Of Education* appeared on 5th June 1644 and although "written above twenty years before," its publication was due to the suggestion of Samuel Hartlib (*q v*) The tractate may be said to be the most eloquent document on education in English Its "magnificence" is rather to be ascribed to its nobility of spirit than to its insight into the pedagogic problem as such Milton's view in the tractate is clearly undemocratic But it should be added that in his *Ready and Easy Way to Establish a Free Commonwealth* (1660) his outlook was very different He says "They should have here [*i e* in England] also schools and academies at their own choice, wherein their children may be bred up in their own sight to all learning and noble education, not in grammar only but in all liberal arts and sciences This would soon spread much more knowledge and civility—yea, religion—through all parts of the land" He ignores infants, and he passes by the question of the education of girls

His scheme of studies up to 18 years of age is as follows—

First Stage [? *Age* 12 *to* 16] Grammar (*i e* Latin grammar) with training in distinct and clear pronunciation after the Italian A Book of Education Cebes, Plutarch, Quintilian, but the main effort "to lead pupils draw them in willing obedience, inflamed with the study of learning and the admiration of virtue, stirred up with high hopes of living to be brave men and worthy patriots, dear to God and famous to all ages" Arithmetic, geometry grounds of religion, agriculture (Cato, Varro, and Columella), use of globes and maps, geography, astronomy, natural philosophy (Aristotle,

Theophrastus, Vitruvius Seneca, Mela, Celsus, Pliny or Solinus)

SECOND STAGE [*Age* 16–18 *years*] Mathematics (trigonometry, fortification architecture, engineering navigation), further natural philosophy (meteors, minerals, plants, animals) anatomy physic practical experience in workshops or the fields and knowledge of the poets who deal with practical subjects such as Hesiod, Theocritus, Aratus Nicander, Oppian Dionysius, in Greek and Lucretius Manilius, and the "rural parts" of Virgil, in Latin

THIRD STAGE [*Age* 18–21 *years*] This is correspondingly extensive

General Aims In his educational aim Milton attempted to reconcile Puritanism and Humanism It was in the midst of the Great Civil War that Milton burned with this educational zeal and made the most exhortant demands upon youths to become "renowned and matchless' men equal to all that life could claim of them The width of view of humanistic encyclopaedism was thus joined with the intensity of recognition of the individual's responsibility before his God and his nation

In 1644 Milton published the *Areopagitica*, which is implicitly an educational claim for complete freedom of knowledge and its dissemination In 1647 he wrote his History of Britain (not published till 1669) In 1669 he wrote an elementary Latin grammar, and, in 1672 a compendium of Ramus's *Logic* In 1667 he published *Paradise Lost* the highest mark of scholarship and poetic inspiration achieved by Puritanism

Milton is the reconciler of realism and classicism and at the same time he has stated the case for the vernacular, when accompanied by accuracy in its use, as the basis of a liberal education in the following *locus classicus* "Though a linguist should pride himself to learn all the tongues that Babel cleft the world into yet if he have not studied the solid things in them as well as the words and lexicons he were nothing so much to be esteemed a learned man as any yeoman or tradesman competently wise in his mother dialect only It may be said of Milton that in his own poems he supplied vernacular literature which helped to raise English as an instrument of expression almost to the dignity which even he felt to be characteristic of the highest classical Greek and Latin literature F W

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MINES, THE ROYAL SCHOOL OF.—Immediately after the Great Exhibition of 1851 a technical school was founded in Jermyn Street, St James's, in association with the Museum of Practical Geology under the name of the Government School of Mines and of Science applied to the Arts Two years later it became known as the Metropolitan School of Science applied to Mining and the Arts In 1859 the scope of its teaching was narrowed to mining metallurgy and geology, and it was re-named the Government School of Mines In 1863 it was called the Royal School of Mines Mining alone being left in Jermyn Street By 1880 most of its branches had removed to South Kensington, and the old building ceased to be used as a college On 12th July 1907 the Imperial College of Science and Technology was incorporated by royal charter at South Kensington and the Royal College of Science and the Royal School of Mines were merged in this larger institution The new buildings were completed in 1913 In the meantime the trustees of the Bessemer Memorial had presented apparatus to the value of £10 000 to a new laboratory, which received the name of the Bessemer Laboratory

Degrees and Courses The School of Mines provides a complete four years course of training in mining metallurgy and the technology of oil It is recognized as a school of the University of London, and its students are eligible as internal students for the degree of B Sc (Lond) In addition a successful course leads to the diploma of A R S M and a further diploma (D I C) is conferred upon those students who take special advanced courses The metallurgical department of the University of Sheffield was associated with the School in 1909 with a view to developing the higher study of iron and steel

A feature of the curriculum is the importance attached to practical training under ordinary industrial conditions During the first two years of the course four months work—a total of 480 hours—must be done in a mine on an oil field or in an oil shale mine or in erecting drilling plant during the third and fourth years 240 hours must be so spent (See also IMPERIAL COLLEGE OF SCIENCE AND TECHNOLOGY SOUTH KENSINGTON THE)

MINIMUM NATIONAL SCALES OF SALARIES (SCOTLAND)—By Section 6 of the Education (Scotland) Act 1918 each education authority is required to draw up and submit for the approval of the Education Department a scheme of scales of salaries for the teachers employed by the authority These scales must satisfy such conditions as may be laid down by the Department after consultation with representatives of the education authorities and of the teaching profession

In August 1919 after a joint conference with a committee of the Association of Education Authorities and of representatives of the Educational Institute of Scotland the Department issued its "minimum national scales of salaries" Every teacher recognized as qualified under the Department s regulations must receive a salary 'not less than he or she would be entitled to receive under these scales had they been in force at the date of his or her original entry upon service in Scotland as a recognized teacher" This important condition was specially valuable in the case of those teachers who had already given long service as they *at once* received 'placing In England a period of three years was required before all teachers reached their proper places on the scales drawn up by the corresponding committee

The different scales were based on (*a*) the length of training undertaken by various classes of teachers and (*b*) the special responsibilities of the position occupied by the teachers They may be tabulated as follows—

	Men	Women
All recognised teachers]	£150–£250	£130–£200
Teachers trained for 3 years	£160–£280	£140–£210
" 4 "	£180 £300,	£160–£230
who are graduates.	£200–£360	£180–£300
of Higher Subjects	£250–£400	£200–£350

This last class of teachers consists mostly of honours graduates, but it is stipulated that they are to receive the highest scale only if they are actually employed in intermediate or secondary schools The annual increments are £5 up to £150, £10 up to £300 and £15 beyond

Head teachers in primary schools (whether men or women) are to receive in addition £10 for each full time teacher normally to be employed in the school, but not exceeding 3 teachers for each 100 pupils Not more than 30 teachers are to be reckoned for this purpose There is a similar provision for infant mistresses in schools with not less than 6 teachers the rate being £3 per teacher and not more than 34 teachers being reckoned

First assistants or second masters and senior women assistants are to have their extra respon sibility " recognized, but no definite scale was prescribed

Intermediate and secondary schools differ so greatly as to size and conditions in different parts of Scotland that it was not found possible to arrive at a classification that would be generally applicable, and accordingly education authorities were left to apply to head teachers and principal teachers of higher subjects the Craik scales, with a suitable increase, roughly proportional to the increases proposed in the case of primary schools

MINING AND METALLURGY, THE INSTITUTION OF.—This was founded in 1892 ' for the advancement of the Science and Practice of Mining in respect of minerals other than coal and of metallurgy of metals other than iron and to afford a means of facilitating the acquisition and preser vation of that knowledge which pertains to the profession of a Mining Engineer and Metallurgist '

The Institution consists of Honorary Members Members, Associates and Students Distinguished persons, eminent for scientific attainments and experience may be elected as Honorary Members

The Members are chosen from persons of at least 30 years of age who are occupied in practical mining or metallurgical work Associates are not less than 25 years of age engaged in practical mining or metallurgical work Students must be not less than 18 years of age and must intend to adopt the profession of mining engineer or metallurgist

The abbreviated forms of designation for these classes are respectively Hon M Inst M M , M Inst M M Assoc Inst M M Stud Inst M M

Admission to each class is by election of the council, the applicant being required to give a full account of his education training and experience, and to be supported by at least two members of the Institution

The House of the Institution is at 1 Finsbury Circus London E C 2

MINING ENGINEERS, THE INSTITUTION OF.—This Institution is a federation of the following seven societies Manchester Geological and Mining Society, 5 John Dalton Street, Manchester, Midland Counties Institution of Engineers Midland Road, Derby, Midland Institute of Mining, Civil, and Mechanical Engineers, Tankersley Barnsley, Mining Institute of Scotland, 39 Elmbank Crescent, Glasgow, North of England Institute of Mining and Mechanical Engineers, Neville Hall, Newcastle-upon Tyne, North Staffordshire Institute of Mining and Mechanical Engineers, 40 High Street, New castle Staffordshire, South Staffordshire and Warwickshire Institute of Mining Engineers, 3 Newhall Street Birmingham

These societies carry out investigations in regard to matters connected with geology, mining, and engineering and hold meetings, at which papers are read and discussed Occasionally prizes are given for the papers

Annually a silver medal is awarded to persons who have distinguished themselves in mining science

The office of the Institution is at 39 Victoria Street London, S W 1

MINING, THE TEACHING OF.—In order more clearly to understand the needs of the mining student, it may be well to trace briefly the growth of the mining industry, considering at the same time the conditions under which the miner has had to work

Coal has been known in this country since the time of the Romans, but not until the seventeenth century did the industry become properly established Up to the beginning of the nineteenth century methods of working coal were very crude, and, in some parts of the country, miners were practically slaves and were bought and sold along with the mine Women and girls were employed in mines even so recently as 1843 The conditions of work underground were bad—ventilation was practically unknown—and to work in an atmosphere laden with foul gases could not make for a high order of intelligence, or create a longing for a fuller intellectual life

The Growth of Mining Education. In early days, the owner of a mine, or the engineer engaged to supervise a number of mines, was often the only person of education connected with the undertaking The stewards or managers, were practical pitmen, but possessed little or no education except that gained by experience this kind of education is often of great value but the process is slow and the price paid for it often very high

Early in the second half of the nineteenth century, mining classes began to be held in various parts of the country, and, in 1863, examinations in mining were instituted by the Science and Art Department, these were open to all, and no doubt gave a considerable impetus to mining education

For various reasons including the frequency of accidents in mines it was considered necessary that mine managers should possess certificates of competency, and in 1872 the first Home Office examination for these certificates was held In 1887 it was extended to include under-managers, and a second class certificate was awarded to successful candidates

A good deal was now being done in the way of mining classes, and, in addition to classes at universities and colleges—mostly attended by apprentices and those destined to take part in mine management—many local classes, attended by working miners were formed

In 1908 attention was drawn to the fact that an improvement in methods of testing for fire-damp

in the pit was desirable and, under the Coal Mines Act 1911, it became compulsory for deputies and shot firers to pass an examination test in one or more of the three subjects Gas testing, hearing and air measurement In 1912 there were 48,775 candidates

The new Act made important changes in the qualifications of managers, and also in the mode of conducting the examinations for certificates of competency The qualifications of surveyors were also prescribed and the examinations for inspectors of mines were thoroughly revised

Intelligence amongst Mine-workers Over 1,000 000 men and boys are employed in mines and the industry is likely to be an important one for a long time to come Pits are deeper and conditions of working more difficult and dangerous requiring more intelligence and scientific knowledge to work them economically and safely The operation of mining coal is a dangerous one, and, although mines may now be considered safer than formerly, there is still room for improvement The death rate per thousand persons employed is at present a little less than 1 5 and this figure is very little lower than ten years ago, in spite of greatly increased legislation directed to the purpose of making mines safer

There is a growing feeling that the only way in which a sensible reduction in accidents can be accomplished is by educating the miner in the subjects relating to safety in mines Thousands are almost entirely ignorant of the elementary principles and facts upon which safety depends The miner, owing to the darkness of the mine and the conditions of working is probably subject to less supervision than the worker in any other industry, and for this reason he should cultivate his intelligence and fit himself for his important and dangerous work

Mining Education in the Future. Those who require mining education may be divided, broadly, into two classes—

1 Those who are able to devote the whole of their time to study for a number of years with a view to taking up positions as mining engineers agents or managers Inspectors of mines mining electrical and mechanical engineers and mining chemists are included in this class

2 Those who can devote only part of their time to study From this class would be drawn many managers and probably all the under-managers and minor officials It would also include the working miner

A desirable scheme for those of the first class would appear to be the following A good general education on liberal lines up to the age of 18 years, followed by five years at a mining school or at a university in which the industry is provided for the subjects taken including mechanical and electrical engineering chemistry surveying, mining practice mining law, and mine valuation If the student wished to specialize in any particular subject the last two years might be devoted to this purpose The long vacations would be devoted largely to the gaining of practical experience in workshops and collieries

At the age of 23 the systematic education of the student would be finished, and he might take up a position as assistant at a colliery, where he would gain experience in practical work and in a few years be fit to take up the position for which he had been trained

The education of this type of student should be broad and generous, specialized only during the last few years

The case of those of the second class who can only devote part of their time to study is very different Their education should be such as to help them to use to the best advantage the valuable experience gained in or about the mine

It will be possible to draw up a scheme which, in its broad outlines, will meet the case of such students as are here referred to and such a scheme is appended but it should be remembered that the ideals the mental capacity, and the temperament of individual students vary very considerably, and to get the best results the classes should be considered as being made up of individuals, each having his own tastes and each probably able to do better work in certain directions than in others The weakness of many schemes is that often the student who is different from the rest and who consequently, does not readily fit in with the scheme that has been drawn up is neglected, and often drops out in despair The present system of part-time educational work implies voluntary effort on the part of the student Voluntary attendance if the teaching given is sympathetic is capable of great results with probably greater individuality than would be gained by a compulsory system

The teaching of the subject is all important and it is probably not too much to say that if the teaching is right everything else will come right

The following points are submitted as being worthy of consideration—

1 The teaching should be alive it should aim at creating interest and if at the end of a two hours' lesson the student feels that only an hour has gone it is on right lines Times and conditions are continually changing, and methods of teaching should change with them A well arranged and suitable lesson for to-day may be quite unsuitable five years hence

2 The teaching should aim at bringing out what is best in the student and the aim should be to give knowledge and understanding and to cultivate common sense rather than to give masses of information which may be more of a burden than a help to their possessor

A writer has said that "Stupidity may be directly cultivated by making a full memory of facts the one thing needful in school' It may also be said that stupidity may be cultivated nearly as readily by calling for no real effort from the student

The students themselves must take a great part in the lesson all of them have had experience of some kind or other, and by working from such experience interest will be aroused and understanding result Where the students are adults with wider experience the value of discussion in the class—if properly managed—is very great

3 In the teaching of science applied to mining, the value of experimental work can hardly be over estimated Before an experiment is performed, the problem to be dealt with might be discussed with the class and suggestions obtained as to the method to be employed to get the desired result In this way interest is aroused, and the result of the experiment is looked for with some eagerness

In the case of adult students in elementary classes, where the intellectual faculties are perhaps not so flexible as in students of a more tender age, the more nearly the form of the experiment appeals

to something within the range of their experience, the better they will understand and appreciate it.

4 The influence of the teacher should extend beyond the classroom The true education of the student is not confined to the work done in the classes, but depends on how much he is influenced by it in his life away from them. If it does not make him a better and more capable man at his work something is wrong with it By interesting himself to some extent in the students' life apart from school, a teacher may be able to give much needed help, and may also himself acquire useful and helpful knowledge

Scheme of Work for Part-time Students. The students to be considered under this scheme are (1) Boys who have just left the elementary school and commenced to work in the pit, (2) those who have reached the age of 18 years or more before taking up the continuation of their education The two classes would, as a general rule be taught separately during the preparatory stages, but might be brought together say at the end of two years The preparatory work would occupy four or six hours per week for at least two years If a teacher can interest his class for six hours per week, so much the better, but it should be remembered that there are other interests in life, and it is better to do good work for four hours a week than indifferent work for six.

The work would consist of elementary experimental science dealing with mining things and phenomena and should have particular regard to the prevention of accidents and the precautions necessary to ensure safety in the mine It should also include mathematics and drawing

Many people dislike stereotyped mathematics and detest drawing, but can use their hands in making things, and, where that is the case, students might be taught to make models of simple mining appliances, when they would unconsciously learn a good deal about both subjects

The work in the third year would consist of a thorough revision and amplification of the work already done, and the students might also be introduced to the subject of mechanics

The fourth fifth and sixth years would be taken up by the further study of mechanics and machinery, the applications of electricity to mining work, the various sources of energy, the production and transmission of power for various purposes, mining methods and practice, and the elements of mine surveying The mathematics and drawing should now be largely applied to the work in hand, and not taken as altogether separate subjects

For students who desire to go further, special courses might be arranged, or facilities provided, for attendance at a mining college or university

Students should not go forward to higher work unless they have satisfactorily completed the work they are engaged in, and as capacities vary considerably it will be found that in some cases eight or ten years will be required to complete satisfactorily the work laid down. G A. L

MIRABEAU, GABRIEL RIQUETI, COMTE DE (1749–1791) —He was the ablest statesman of the French Revolution He was a member of the *tiers état* in the States General, and soon became a leader and a great force in the National Assembly He dreaded anarchy, and exerted all his influence in favour of moderation, recommending a new constitution under the King on the model of the English Parliament, with a strong executive In December 1790, he was elected president of the Jacobin Club and for a few months strove to preserve the French monarchy His chief published work was the famous *Essai sur les Lettres de Cachet et les Prisons d'État* (1782)

MISSIONARIES, THE EDUCATION OF.—The education of the missionary offers some problems for solution which are essentially different from those offered by the education of members of any other profession In all education there is that difficult question to decide—how far it shall be generalized and how far it shall be specialized The old saying is always true that a man should know a little of everything and everything of some thing but the exact limit to be drawn between special professional training and general knowledge is one both of the greatest importance and of the greatest difficulty But in the missionary case the difficulty is further complicated by the fact that conviction—not knowledge—is the essential qualification required unless the missionary's work is lit up by an enthusiastic faith, his work must prove a failure and he himself in all probability will leave his task in the mid-day of his life to find some more congenial pursuit in a secular calling

Therefore we postulate first that the essential quality of the missionary is one that cannot be given by education "The wind bloweth where it listeth and thou hearest the sound thereof, but canst not tell whence it cometh nor whither it goeth, so is every one that is born of the Spirit"

But when we have said this we fully realize that granted the enthusiasm of faith efficiency is vastly increased by a suitable education Without a dissentient voice the missionaries on the Field bear witness to the importance of education It is needed for three reasons first, because the missionary, especially in the Asiatic Field, is being brought more and more in contact with the educated classes, and he must therefore be an educated man himself to obtain their respect, while the fact that those with whom he is brought in contact are brought up in systems of thought alien to the Occidental world must compel that education to be wide if it is to earn that respect The missionary must add to this a general knowledge of the systems of thought of the country in which he labours And he must accomplish that which really is the most difficult task for any man he must learn to compare the two systems of thought and to represent an idea with equal facility in the terms of either intellectual system One of the greatest mistakes that *were* made in the Field was to insist on representing Christianity merely in terms of Western thought Like the Renaissance painters, the earlier missionaries dressed Biblical personages in the clothes of their own age, with the result that thoughts and characters which would have been essentially attractive to the Eastern mind became repulsive because of the natural distaste that the Eastern has for Western thought The mistake that *is* being made is that the missionary, dazzled by the enthusiasm which many of his Oriental hearers feel for Western civilization, forgets that many of the things that exist in the West are out of harmony with our Saviour's teaching, and that, if Christianity is to be understood as it was originally taught, the West must frankly own to the East that it is sinning against the light of revealed wisdom. But, on whatever side the mistake is made—whether the

Eastern who hates the West is forced to drink the water of life rendered filthy by Western thought, or whether the Oriental attracted by Western wealth is encouraged to regard the foulest mud of our industrial activity as the water of life—the error is the same, the missionary has not been able to state Christianity so clearly in terms of Eastern thought that it is essentially separated in their minds from Western activity The undying cause of the Saviour of mankind has been wrongly attached to the intellectual position of the West, which may, after all prove ephemeral, and in many of its aspects is immoral

Necessary Subjects of Study These considerations point to philosophy in one form or another as an essential part of the missionary s intellectual training He should be taught to understand his own thought before undertaking to transmit it to others The Edinburgh Conference recommends as the five necessary subjects Science and History of Missions Religions of the World Sociology, Pedagogy and the Science of Language These five categories include much of philosophy still it would perhaps be wiser to adopt a different grouping and frankly to place philosophy in the forefront of the general education of the missionary This would lead naturally to sociology and to the study of the religions of the world Science and History of Missions should follow this It would be perhaps wise to include in that history the missions of other religions for which the study of the Religions of the World would have prepared the mind Much confusion of thought would be avoided by this method For instance, one constantly hears even missionaries of long standing speaking of the teaching of Christianity being difficult owing to its being a foreign religion, but the study of Buddhist Missions would reveal that "foreign ness" is for some mysterious reason not detrimental to the success of a missionary undertaking while the fact that the Koran is never translated must have an influence on the question how far it is proper to translate sacred words, or whether it is not wiser merely to transliterate names which are to be held in great reverence The History of Missions will of course deal fully with the early spread of Christianity in our own lands, and we should thus guarantee the student from thinking that either the work of St Paul or the Book of the Acts of the Apostles affords a sufficient guide for the missionary in his work The history of the initial stages of that internal movement by which the Roman Empire accepted Christianity affords little help to a foreign missionary who is attempting to convince a nation of the truth of a foreign religion The history of the conversion of the Teutonic races affords, however, many close parallels and especially is the study of their conversion illuminating with regard to the problem of how much of the existing customs and religious life of the nation ought to be included in the Christian polity and how much must necessarily be destroyed The missionary would realize how wise our Fathers in the Faith were in frankly incorporating customs of purely pagan origin in our Christian life On the other hand, it would serve as a warning to those who would incorporate too much, for instance, to those who suggest that Buddhism and Christianity can well be welded into one religion The history of the Nestorian conversion of China and its subsequent failure would be enlightening on this point also Perhaps some would not place the same emphasis as the Edinburgh Conference on Pedagogy, but there can be no doubt as to the great importance of language study

And here we come across a subject of profound interest, and one which the Edinburgh Conference left open, but which may now be regarded as definitely settled, namely, the question whether language study should be undertaken in the Homelands

Professor Meinoff, in an article in the *International Review of Missions* urges strongly the teaching of languages in the Homeland "A native teacher" he says with great truth "is perfectly useless except for pronunciation and the advantage of native teaching can be secured by employing native teachers in the Homeland while the science and system can be best taught by Western language teachers'

Mr Bailey in the same Review makes a very efficient answer by pointing out the value of the mental atmosphere which surrounds the learner in the Mission Field "There seem however to be three considerations which must finally decide that the bulk of the language teaching should be carried out on the Field The first is the great diversity of the tongues that have to be taught in Africa they are literally without number, in China and in India they are exceedingly numerous now, though you might teach with effect the classic languages of the Oriental civilizations in the Home land such as Sanscrit Arabic and classical Chinese considerations of expense would render it impossible to have teachers for all the vernaculars with which missionaries may be brought in contact The second consideration has even greater force namely the advantages that teaching languages in the Field gives to that co operation which we all feel in some degree is necessary to our missionary effort On the Field controversies are not so underlined everybody feels the vital issue is between Christ and His opponents, and, without any sacrifice of principle everybody naturally feels the brotherhood of Christianity The third consideration is even more important namely that real co operation is a question of spirit more than of organization Men who are working on the Field and have got to know each other personally though they may differ profoundly on religious points will nevertheless have the spirit of co-operation they will always take the favourable view of the teaching and action of any with whom they have personal contact'

Work of the Central Board of Study The British Board of Study, whose work is recommended by such names as Dr Steele Dr Murray Mrs Creighton and Dr Wardlaw Thompson, holds that there is a great need of new colleges for the study of languages but that it should not be an institution merely for language study The college should deal with the historical philosophical, and scientific sides of missionary work and it should be taken in addition to, and not in substitution for, the theological training of the university it should make the man more apt and fit to learn that which is taught in the language school in the Field, and it would be a good thing if, later on in the missionary's life, he could again return to the Central College in the Homeland, and there continue his studies and fill up the lacunae in his knowledge, the importance of which his practical experience in the Mission Field has made him realize A central and a co-operative institution might give an opportunity for technical courses

which, though not universally necessary, are desired for some members of the Mission For instance, it is neither possible nor desirable that every missionary should be a good business man but it is a great advantage if one member of the Mission has a knowledge of that ordinary routine which we associate with the word business It would save a great deal of time to the other members of the Mission we might add, anxiety and possibly loss of funds Again, the science of modern sanitation in tropical countries is undergoing a constant change owing to new discoveries one would not for a moment require that every missionary or even every Mission doctor should have a profound knowledge of the engineering and mechanical methods of securing the advantages of modern sanitation still it would be a great advantage if one member of the Mission or at least one missionary in the whole Mission body had such a knowledge of modern sanitation that he could speak with authority recognized alike by the Home Board and the local Missionary Committees many a valuable life has been lost and will be lost again because the real importance of certain measures has not been thoroughly realized Again there arises the question of industrial work The industrial missionary has too often been a man coming from less educated strata who has merely tried to teach the native world our methods of industrial activity but it is more and more felt by those who are conversant with the Orient that there are two sides to such work namely, the teaching of the excellence of Western methods and the preservation of Oriental characteristics it is unfortunate from several points of view if that which is manufactured in the missionary industrial centre becomes merely an inferior imitation of Western work The native tool should be used wherever possible, native designs followed native recipes preserved even if improved all that the industrial Mission should try to do is to add that organization and efficiency which is characteristic of the industrial Western world But, to learn this a man does not need to pass through the workshop of a Western town he wants to learn from a man who has had experience out there how and where he can improve the industrial products of the country so that the native note is not lost in the production

All these and many other spheres of educational activity might come in time from a Central College Might we add that it would not be altogether a bad thing if those who have no intention of going to the Mission Field—for instance members of the Home Board—were allowed to attend the Graduate Lectures at this Central Institution?

The failure of much of the mission work can be attributed to the narrow view of the Home Board and so, when we speak of the education of the missionary, we should like to add this *caveat* that, the more educated the missionary the more important it is that those who direct the central policies of the societies should have a profound knowledge both of the methods and opportunities which the modern condition of missionary work recommends W G C

MISSIONARY SOCIETY, THE EDUCATIONAL WORK OF THE LONDON.—The mission field of this Society lies in India, China, Central Africa, Madagascar, and the Southern Pacific As an aid to its evangelizing work, it has established elementary schools, high schools, and colleges, carried on by the Society's missionaries, some of whom are wholly engaged in education, assisted by a staff of over 1,500 native Christian teachers of both sexes as well as a considerable number who are not Christians The purpose of these educational establishments is twofold in the case of elementary education, to provide the learner a means of reading the Bible, and, in that of higher education, to train men and women to carry on the mission work of the Society The higher education is almost entirely self supporting, except for the salaries of the few missionaries now engaged in the work

India. At Calcutta the Bhowanipur Institution founded in 1863 affords education for over 300 children of every age and class chiefly Hindus of various castes, with some Mohammedans and about fifty Christians The majority of the Christians are boarders under the care of the missionary and his wife The Institution is affiliated to the Calcutta University and the highest class prepares boys for the Matriculation examination of the university Continuing the school are the college the science laboratory and the library The college course is spread over four "years" two to prepare for the first Arts, and two for the final B A The teaching staff includes several Christian Bengali masters and professors and the principal has always been an English missionary but the head of the school is usually one of the ordained workers of the Mission Definite Christian instruction is given throughout the institution by the missionaries

There is also a Christian girls' boarding school in Bhowanipur conducted along the lines of the Government Code and receiving a Government grant Close by is also a Hindu girls school, but the Hindu girl is usually withdrawn at about 10 years of age to become the secluded wife The zenana compound may however, be visited by the Bible teacher, but her work is mainly secular There are other schools in rural Bengal, around Murshidabad where industrial work is undertaken for the benefit of the sons of cultivators Another important centre is Benares where the work is similar to that in Calcutta In this district is included a Christian girls orphanage In Southern India and Travancore the schools are in connection with extended schemes of Government education, and carried on in all the manifold forms of schools In many, the teaching is entirely in the vernacular, but in some, English is taught as a language subject Many of the schools are very small and buildings of a primitive kind In Travancore there are 300 schools, with 12 000 pupils, and in Madras and Mysore nearly 500 schools and 16,000 pupils

China The centres in China are Hong Kong, Amoy Shanghai, Hupeh Chung King, and Peking In Hong Kong education is under Government supervision which fosters existing educational work by grants in aid Here, as also at Amoy, the work is extended to surrounding villages where numerous small schools have been established At Shanghai the Medhurst Memorial College and the Girls' Boarding School provide secondary education, with five elementary schools acting as feeders Hankow has five primary schools and a boys' high school, and at Wuchang there is a girls' high school The training of teachers is carried on at Chung King The Chinese mission schools all labour under great difficulties owing to lack of Chinese trained teachers, lack of normal schools, and the great barrier of the Chinese written character

Africa. The mission work has, in recent years, been confined to Bechuanaland Matabeleland, and the shores of Lake Tanganyika About seven miles from Vryburg is a central educational institution at Tiger Kloof opened in 1904, and providing education for about 200 pupils technical training being an important feature In Matabeleland small schools are carried on in the mission buildings Around Lake Tanganyika the mission has worked for some twenty years and "it is coming to be looked upon as respectable for a chief to have a school in his village and fast becoming the fashion to learn to read"

Madagascar. Here we find village schools station schools high schools industrial schools normal schools and a theological college The work has suffered severely from persecution and opposition From 1820 to 1835, schools increased to 100, then followed a great persecution Toleration in 1862 caused a revival and by 1894 the schools numbered 1 290 and the pupils 74 796 Under French administration it was made practically impossible for youths over 12 to be educated at Christian schools and by 1899 only seventy one schools remained since which time the numbers have fluctuated considerably

South Seas Village elementary schools on modern lines are carried on in Samoa Gilbert Islands Loyalty Islands and New Guinea In many cases the hours of work are the cooler parts of the day (6 to 9 a m and 3 30 to 5 30 p m) It must be remembered that in tropical regions the sun does not rise earlier than 5 30 a m, nor set later than 6 30 p m

MISTRESSES IN PUBLIC SECONDARY SCHOOLS, ASSOCIATION OF ASSISTANT.—This association was inaugurated in 1884 and incorporated in 1897 its chief aims being to promote the cause of education generally in the United Kingdom and elsewhere, to protect and improve the status and to further the legitimate professional interests of teachers

Membership is limited to assistant mistresses in public secondary schools but members of at least one year s standing ceasing to serve as assistant mistresses in public secondary schools may be re-elected as ordinary members provided they have not become head mistresses

A general meeting is held annually

MNEMONICS —This is the name given to the art of assisting the memory by arbitrary methods of recalling to the mind isolated facts or numbers, or series of disconnected facts or numbers The simplest form of the art is the association of the fact with another which is more familiar and more easily recalled A more advanced form appears in the use of rhymes such as "Thirty days hath September, etc and the many Latin rhymes which have been used for many years in grammar schools for the purpose of memorizing rules and exceptions to rules The more arbitrary type of mnemonic words is illustrated in books on Logic by the words (Barbara Celarent Darii etc) which were invented some six centuries ago to facilitate the recollection of the moods of the syllogism The ancients employed a method known as "topical mnemonics" for recalling the order of arguments and illustrations in their speeches This method is at least as ancient as the time of Plato The orator selected a house of which the details were all familiar to him and associated with each part of his speech some suggestive part of the house such as the opening with the entrance hall Many systems have followed that of the German, Feinaigle, whose scheme associated the ten digits with certain letters of the alphabet, and hence dates and other numbers with arbitrarily formed words such as 547 with *lrk* (lark)

MODALITY.—(See JUDGMENT)

MODEL SCHOOL.—(See PRACTISING SCHOOL)

MODELLING (CLAY), THE TEACHING OF — Clay modelling is rather an instrument of educational value than a means of technical training Other media (*e g* wood and metal) have superior technical claims, correct working in them demanding skill in the use of a wide range of tools together with the knowledge of many intricate processes The technique of clay is essentially simple

Form is produced by additions each accommodated and adapted by mere pressure of finger and thumb—the only necessary tools, in the elementary stages at least The tactual sense is thus brought into direct relation with the medium and all impressions are first hand—a very valuable factor in the acquisition of knowledge Thus the mind is led to think definitely in terms of form a process requiring the co-operation of both mental and physical activities full expression of the concept demanding merely a continuance of those activities

To ensure the successful use of clay as a school instrument there must be present (1) Clear ideas of the educational significance of modelling (2) correct knowledge of child nature and of his mental and physical development and (3) some acquaintance with the technique of modelling However slight the last may be if the first two are present the teacher is well equipped for his task but no amount of skill in technique can compensate for lack of the other essentials

School life may be roughly divided into four sections thus—

1 The **Preparatory** or Kindergarten stage where play is the dominant motive for all the handwork Modelling should arise quite naturally out of the need for expression and the oral lessons will be designed with this end in view As for the expression it is not so much a matter of how the children model as of what they model The 'how must be directed by the teacher s example as she works among her pupils, for the time being as one of them —never by precept There is no occasion to prescribe objects or even topics to test expression, and as for the study of form especially that of natural objects the children are much too immature to appreciate its intricacies If they are set as school exercises either the children soon get tired, realizing the hopelessness of their attempts, or their judgment is early dulled and they acquire satisfaction in a low standard of work—a bad outlook for the teachers who are to continue their education

2 The second coincides with the birth of a higher motive, viz the earlier creative instinct The youthful architect is engrossed by **Building** and the erection of real forms. His castles of wood and brick and forts of sand, find their counterpart now though the scope of his work is limited by the nature of the medium, objects must be made on a smaller scale, first because space and material

demand it, and, secondly, because clay requires mechanical support if raised more than a few inches.

Circumstances now require definite and purposeful instruction If the play has been wisely directed, there will be no occasion to unlearn wrong technique All that is necessary is for the good instruction to be continued

This stage should still include scope for expression though this aspect of the work should not be the be-all and end-all The various media in common use need not be divorced, it is much the better plan to keep all the handwork in intimate relationship If a native scene is to be represented for example the parts that are most readily made in thin wood paper, or cloth should be reserved for those media the clay appearing only where it seems most reasonable to employ it

3 The third stage finds the pupil on the threshold of the handicraft or domestic centre **Accuracy** begins to be appreciated for its own sake, and so modelling can be approached from the standpoint of the study of form in mass with its contours and surfaces as seen from different points of view It is this detailed study of the solid that gives life and reality to the related representation by drawing in line and colour the linking up of the two enhances the educational value of each

The character of the work attempted at this stage marks the high water of attainment of many pupils

4 The fourth stage is reached irrespectively of age when the **Artistic Sense** begins to reveal itself The wise teacher takes pains to foster and develop it Leaf forms shells and fruits afford excellent practice The human form may be thought too difficult, but any pupil can study with good results the fist foot ear or even profile of one of the little fellows in the school STEWART TAYLOR

MODELLING (PAPER).—(See PAPER TEARING CUTTING FOLDING AND MODELLING HOW TO TEACH)

MODERATIONS—A name given by Oxford students to the first Public Examination before the Moderators It is the second examination required of candidates for the degree of Bachelor of Arts the first being known as Responsions (*q v*) and conducted by the masters of the schools

MODERN HUMANITIES RESEARCH ASSOCIATION.—Founded in 1918 to encourage advanced study in modern languages and literature by co-operation through correspondence personal intercourse, the exchange of information and counsel and financial support for students engaged in research The association aims at improving and facilitating means and methods and seeks such a co-operation of isolated effort that those interested or engaged in the same branch of research shall be kept informed of each other's work, and that unnecessary duplication of energy shall be avoided

Membership of the association is open to graduate students of all countries at the discretion of the committee Approved institutions and associations may become members A quarterly bulletin is published describing the proceedings and activities of the association

The association further puts members who have interest in cognate subjects into touch with one another through the secretary collects and circulates information and suggestions likely to be of permanent use to research students, procures specialised information for members who are prevented from making personal investigations organises co-operative research on the part of those who have not the opportunities to do much individual work It hopes, as soon as funds permit, to undertake publication of original work, to found bursaries and scholarships for the furtherance of its objects

MODERN SCHOOLS IN SPAIN.—The dense ignorance of the population of Spain at the end of the nineteenth century was indicated by the fact that the Census of 1903 showed nearly 12,000,000 as entirely illiterate out of 17,750 000 Francisco Ferrer, a Spanish educator, had received under the will of his wealthy pupil, Mademoiselle Menier, a large sum of money to be used for education in Spain (1901) Being an agnostic and strongly opposed to the restrictions on education in the existing schools of Spain he proceeded to use Mlle Menier's legacy in founding a rationalistic school in Barcelona Its classes were first attended by twelve girls and eighteen boys sent by parents who desired rationalistic teaching for their children Ferrer provided fine rooms good teachers, and attractive lessons and the number of scholars quickly increased Demands came from other parts of Spain for modern schools and Ferrer eagerly gave his assistance Republican schools which had arisen during the previous forty years, received a great impetus from Ferrer s work and spread rapidly By 1906 more than fifty schools had been established chiefly in Catalonia The author of *The Martyrdom of Ferrer* (Mr James McCabe) compares Ferrer s work with that of Robert Owen in New Lanark and describes him as a man of great human sympathies taking a keen interest in the moral and physical development of the children in his schools The curriculum was a broad one but excluded religious teaching In all ways the school was better than others of its grade in Spain being hygienic and efficient, and making education a means of enlightenment

MODERN SIDE.—The section of an English public school in which greater attention is paid to modern languages, science mathematics and commercial subjects than to classical studies Such schools have a classical side, in which Latin and Greek are the chief subjects of study while on the Modern side these are usually not taught at all, or only Latin rudiments are taught Many of the old grammar schools founded Modern sides when re organized under the Endowed Schools Acts On the Modern side, boys are not as a rule prepared for the universities

MODULATOR, THE.—(See TONIC SOL-FA SYSTEM)

MOHAMMEDAN EDUCATION.—The history of Mohammedan education begins with the Prophet himself In the house of his disciple Arkam, he preached and taught privately even before his public ministry began A special day was devoted to the teaching of women seeing that women were among the earliest converts to Islam This refers to religious instruction, but the circle of knowledge was soon widened

Ibn Abbás, a cousin of the Prophet, gave regular public lectures to large crowds in a valley near Mecca—one day on the interpretation of the Korán, another day on the Law a third, on Arabic grammar, a fourth, on the history of the Arabs, a fifth,

on poetry, and so on This open air teaching soon gave place to systematized instruction in mosques Abu d Darda first taught *a class* in a mosque he died A H 32 (A D 653) He confined himself to teaching the reading or chanting of the Korán but his example established the prototype of the Korán schools attached to the principal mosques throughout the Islamic world down to the present day Grammar was taught publicly in the mosques at Damascus before A H 126 (A D 744)

Before the Foundation of Baghdád The middle of the second century of the Hijra say A H 145 (A D 762) the date of the foundation of Baghdád and of the consolidation of the Abbaside Khalifate marks a distinct epoch in the history of Moham medan civilization and education The previous century and a half was a period of preparation marked by the development of the peculiarly Arab traits common to all departments of education and learning Under the Umayyads whose seat of power was in Syria noble familes used to send their children to the Arabian desert to learn the correct Arabic idiom and acquire the ways and moral principles of the Arabs For in Islam the oldest educational tradition as well as modern practice except where affected by European influences insist upon the twin processes being carried on side by side—*ta lim* the teaching of knowledge and *tarbiyat* the upbringing in the right principles of manners and conduct

The whole scheme of education centred on religious knowledge This knowledge was originally built up on oral traditions conveyed direct from the Prophet as the source of inspiration and the exem plar of conduct to his immediate Companions and transmitted by them to the second generation who had met only the Companions but not the Prophet With the third and fourth generations the number of transmitting authorities was very largely ex tended The chains of evidence were then tested and the sifted results incorporated in a voluminous body of literature This was the science of *Hadíth* or Traditions, which, next to the reading and interpretation of the Korán was accounted the most important branch of higher education Side by side grew up an imposing system of Moham medan Law built up on the Korán and the Tradi tions but systematized and interpreted by a study of customs and the influence of juristic ideas—Arab Syrian Graeco Roman and Persian Ancil lary to these studies were the practical sciences arithmetic for working out the shares of inherit ance according to Koránic law astronomy for the orientation of mosques towards Mecca, for chron ology and the compilation of the calendar gram mar and rhetoric for the interpretation of texts and traditions and history and genealogy

We see in this first period the beginnings of the broad division of sciences into two classes (1) the *Nakli* or transmitted sciences which held the most important place (2) the *Akli* the sciences of pure reason then at a rudimentary stage but rising into prominence with the progress of refinement and the increasing contact of Mohammedans with the culture of non Arab nations notably Persians Egyptians Jews, Greeks Hindus and Buddhists of Central Asia At the end of this period elementary education was widely diffused—through the mosques where it was free, or through private tutors who charged small fees or lived on presents and followed other occupations or were maintained by the rich for the benefit of the poor Its scope included, besides prayers, the reading of the Korán in Arabic (which did not necessarily go with the writing of the Arabic character, especially among women and among the non-Arab Muslims) and elementary history sacred genealogies and traditions Higher education comprised the whole circle of the *Nakli* sciences which were gradually attaining a high degree of perfection, and the *'Akli* sciences in the rudimentary stages which they had so far reached

There were yet no specialized academies or colleges but famous mosques were centres of higher instruction as also were the houses of distinguished learned men who gravitated to cities like Mecca, Damascus and Basra and collected private libraries establishing schools of thought or con tinuing the traditions of their masters Theoretically higher education was entirely free to sell knowledge was considered disgraceful Promising but poor, pupils were supported by wealthy patrons who honoured the learned and loaded them with gifts and sometimes the masters themselves gave purses for the support of their favourite pupils

From the Foundation of Baghdád to its Sack by the Mongols The second period of Mohammedan education extends over five centuries from the foundation of Baghdád (A D 762) to its sack by the Mongols under Huláku (A D 1258) It might be conveniently divided into two portions at about the time of the compilation of the *Encyclopaedia of the Brethren of Purity* (*c* A D 1000) Before this Baghdád and the Eastern Mohammedans led the world in learning and the sciences grew rapidly subsequently Spain and Northern Africa became more important and the facts gathered or dis covered were classified and systematized In both epochs there were continual intercourse, and free interchange of professors and pupils between the Mohammedan colleges and universities of the East and of the West This intercourse extended in a minor degree to the Christian (including Coptic) Jewish Buddhist and Brahmanical centres of learning This antithesis between East and West must not be allowed to obscure the important part played by Muslim Egypt in all these developments and its unique position of historic continuity in the growth of Muslim institutions

Outstanding Personalities The two outstanding personalities of the early Abbaside period for our purposes are Hárun ar Rashíd (*ob* A D 809) and his son Mámun (*ob* 833) Both were great patrons of learning and of academies and libraries and Hárun maintained friendly intercourse with Charlemagne Hárun s famous present of the striking water clock to Charlemagne implies a high degree of mechanical skill in the Abbaside empire Mámún offered the Byzantine Emperor perpetual alliance and peace in return for the loan of Leo the Mathematician which was refused In his reign, medicine mathematics, astronomy geography (in a very extended sense) and music were studied eagerly besides the older Muslim sciences Hárún founded the University of Baghdád with hospitals and medical schools and the power of holding medical examinations Mámun established universities in Basra and Samarkand There was eager rivalry in the study of the natural and experimental sciences in which human knowledge was advanced in many directions An Indian ambassador had brought astronomical tables to Baghdád in A D 773 The decimal system with the zero was introduced by Al-khwarizmi early in the ninth century A D ,

and was identified with his name in the Latin word *Algorismus*, which was used for the decimal system for centuries In the latter half of the tenth century the mathematician and astronomer, Abdul Wafa al Barjani introduced trigonometrical tangents credit for which has been wrongly given to Regiomontanus

Influence of Philosophy and Religion on Education. The Arab had a particular predilection for philosophy Both the Roman and the Byzantine Church frowned upon secular learning, but the schismatic and Oriental-Hellenistic sects and schools of Alexandria Syria and Western Asia generally supplied an early stimulus to Mohammedan thought Aristotle and Plato through Syriac and Hebrew and later through Arabic translations, established a firm hold on the Eastern mind and were so identified with Muslim philosophy for centuries that they were even condemned in the West on that very ground In Muslim thought the strong and practical common sense of Aristotelianism struggled with the mysticism of Neo Platonism, the Manichaeism of Persia the asceticism and pantheism of the Buddhists and the Vedantism of the Brahmans The result was a large crop of sects and schools of philosophical and religious thought, whose rivalry vitally affected the progress and complexion of Mohammedan education The Mu tazila school which insisted on rationalism and free will was founded by Hasan of Basra (*ob* 728) but succumbed after a brief but brilliant struggle The various schools of Sufism ascetic mystic and pantheistic have left a very deep impress on Muslim thought and are at the present day living forces As they identify the Saint with the *'Árif* (the man who knows) knowledge philosophy and higher instruction occupy a very important place in their system their lodges are scattered about the Muslim world and in many cases hold wealthy endowments Another aspect of their activity is shown in the Muslim Religious Orders well organized in Egypt and North Africa but found also in open or secret operation throughout the Muslim world they have their seat often at a Saint's Tomb to which in many cases is attached a college of higher learning

The Abbaside period was also strong in the rise of numerous sects which established their own educational propaganda Notable among these was the Ismá'ili Sect, to which we probably owe the *Encyclopaedia of the Brethren of Purity* the ablest extant defence of philosophy and universal knowledge in the interests of religion To this sect is due the foundation of the famous Arabic University of Al Azhar in Cairo (A D 972) Founded in the interests of Shi a doctrines it was under a cloud on the Ayyubist (Sunni) conquest of Egypt, under Saladdin (A D 1171) and its endowments were confiscated Both the mosque and the university were restored to their dignities after a reconstruction on orthodox Sunni lines (A D 1266–1267) The university has since gathered many endowments and added new chairs and has pursued an unbroken career within the orthodox pale despite all the political changes which Egypt has undergone

Political changes in other parts of the Islamic world were responsible for changes in the character and organization of Mohammedan education When the Abbaside Empire weakened in the tenth and eleventh centuries A D , there was a *de facto* decentralization of power, reflected in increased educational activity in the outlying provinces and a further development in Baghdád itself Mahmúd of Ghazni, the first sovereign to assume the title of Sultan enriched Ghazni with fine schools, colleges and libraries (*c* A D 1020), and his nobles followed his example Nishapur had been a seat of Persian learning and we hear of a special college being built there about A D 1016, and of later endowments there by Nizám-ul-Mulk Tusi, the celebrated vizier of the Seljuks who endowed a series of colleges at different centres Each such college was called a Nizámiya after him The Nizámiya University in Baghdád founded *c* A D 1066, was hailed as marking an epoch Its special propaganda was scholastic theology a new science subsequently perfected by Ghazzáli (*ob* 1111) It was apparently the first Muslim institution in which stipends were provided for all students *from State funds*, and learning was made attractive with worldly prospects This innovation did not pass without protest on the part of the learned men (*'Ulema*) of Transoxiana who met in council and solemnly deplored that learning was not now to be pursued for its own sake There was a rapid extension of the movement, and Nizámiyas were established in Herat, Mosul, and Ispahán besides those in Nishapur and Baghdád already mentioned

The Seljuks The Seljuks gave a practical education to their Turkish Mamluks keeping steadily before them the needs of administrators and soldiers Education on similar lines combining military and naval arts with instruction in the sciences, was given in a college founded by Abdul Múmin in Morocco (about A D 1151) for his princes and young noblemen

In Spain, which was comparatively free from the bitter sectarian feuds of Western Asia and Egypt, education developed on very liberal lines, though it does not appear to have been organized on a State basis Hakam II (*ob* 976) founded twenty-seven free schools in his capital, paying the teachers out of his own private purse Almost every one in Spain could read and write and there were universities in Cordova Seville, Toledo, and Granada

The Golden Age of Mohammedan Learning. This was the golden period of Mohammedan education Elementary education presented no specially new features, but it became more widely diffused, and the incorporation of many distant nations within the pale of Islam brought within its sphere many different languages, which came to be written in the Arabic character This was rendered more flexible than the old Kufic, and diacritical marks were introduced In the regions of higher education, we find a wonderful expansion and progress The Nakli sciences were perfected and systematized and the 'Akli sciences were raised to the highest importance in the scheme of education

The intellectual curiosity of the Mohammedans embraced every conceivable subject We have already mentioned mathematics, philosophy, and the natural and experimental sciences (including medicine and astronomy) Navigation, travel, and exploration had keen votaries The science of education itself interested them, there was an Arabic treatise on the education of children ascribed to Plato Co-education seems to have been practised in the elementary schools, as it is now in some elementary Koránic schools the Persian poet Nizami (in the twelfth century A D) makes the lovers Laili and Majnun fall in love during their meetings at school The educational reforms proposed by the Kázi Abu Bakr ibn al 'Arabi, of

Seville (*c* 1122) are discussed by Ibn Khaldûn The Ikhwan us-safa includes, among ordinary subjects of study economic science (trade and crafts commerce, agriculture cattle farming), and, under philosophical studies, meteorology, mineralogy, botany zoology anatomy embryology, etc In the mechanical and optical works of Al Hazen [Abu 'Ali Al Hasan (*ob* A D 1038)] he mentions magnifying glasses and discusses problems of refraction it was in accordance with his ideas that the first spectacles were made Kepler still found him useful in the seventeenth century The *Kânûn* of his contemporary Avicenna [Abu 'Ali ibn Sina (*ob* 1037)] also maintained its hold on Western universities till the seventeenth century And works of reference were compiled in abundance—encyclopaedias abridgments and dictionaries—scientific, philosophical philological biographical geographical etc It must not be supposed that this vast influx of new and increasing knowledge was viewed by the orthodox without alarm To combat the free thinking propensities of the third and fourth centuries of the Hijra (*c* A D 900) and schisms like the Mu'tazila the new science of Scholastic Theology (*al Kalâm*) was invented by Ash'ari This became the orthodox philosophy of Islâm It tried to steer a middle course between the extreme rationalism of the Mu tazila and the antinomianism of the extreme Sufi schools In practice it amounted to a reduction of religion to verbal dialectics and killed the fresh and fearless spirit of universal inquiry which had enabled Muslim science to achieve its victories As it was artificially fostered by the State in its chairs of Nizâmiya and other colleges it gradually obtained the upper hand in higher Muslim education and arrested its natural growth In this sense its influence on Mohammedan education in orthodox circles and systems extends to our own day Islâm in its fourteenth century may yet throw off its depressing yoke as Europe did with its scholastic philosophy in its fifteenth and sixteenth centuries

Influence on the European Renaissance The third and fourth periods need not detain us long The third period extends from the end of the thirteenth to the end of the eighteenth century A D These five centuries were comparatively sterile for Islamic thought and education But the torch of progress was now handed on to Europe in which the thirteenth century saw the rise of the great universities on the basis of science civil law (as opposed to canon law) and the Greek classics The earlier Mediterranean universities like those of Salerno and Montpellier were frankly based on Arabian learning European scholastic theology itself owes a debt to Averroes (Ibn Rushd *ob* 1198) and Arabian Aristotelianism but the antidote was supplied by the Greek Aristotle Pioneers of modern science, like Roger Bacon (*ob* 1298) built on Avicenna Alkindi and Al Hazen the intellectual progenitors of Renaissance science just as the brilliant Arab philosophical historian Ibn Khaldûn (end of the fourteenth century) was the intellectual ancestor of Gibbon The robe of learning introduced by Kazi Abu Yusuf of Baghdâd (*ob* A D 798) was the prototype of the academic dress of the European universities

Under the Ottomans at the end of the fifteenth century, a preparatory educational system was organized, the different schools were knit together and closely joined to the State The *Ijâzas*, or licences to teach, which used to be given by the 'Ulema individually were now superseded by the general degree of *Dânishmand*, which was made necessary for teachers in the lower-grade schools

Modern European Influence. The fourth and last period began with the dawn of the nineteenth century and extends to the present day The Muslim States began to be influenced by the European Powers, many Muslim countries having since passed under European rule Two tendencies began to be observable, which have both received an enormous impetus in our own day In the first place, the old seats of learning and the orthodox subjects and methods of study are beginning to feel the modern influence Attempts have been made to reform old institutions like the Azhar, with doubtful success But far greater success has been achieved by the second movement—that for the foundation of modern schools and colleges, with modern courses of study through the medium in the higher stages, of a European language This movement is not peculiarly Muslim but affects the Mohammedans Its results must be studied in the general educational systems of the different countries concerned The Aligarh College in India now raised to the status of a Muslim university with possibilities of religious instruction the new University of Constantinople the College of Political Science opened in Teheran in 1900 and the scheme for a modern university in Cairo and a college in Khartoum are instances of this movement in higher education Primary education is now theoretically compulsory for both boys and girls under Ottoman law The Persian National Constitution of 1907 has a reference to compulsory primary instruction and to the higher study of sciences arts, and crafts but the organization of Persian education will depend on more settled political conditions In India progress is already assured under the British Flag and in Egypt under British influence Algeria is under the general French educational system but there are special "Arab" schools Tunisian education has long felt French influence as Moroccan education soon will feel it On the whole the outlook for Mohammedan education may be considered hopeful, as the governing influences in the Mohammedan world are coming more and more within the circle of modern ideas

A Y A.

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MOHAMMEDAN EDUCATIONAL MOVEMENTS, MODERN.—The basic ideas of the educational tradition in Islam have been detailed in the article on MOHAMMEDAN EDUCATION (*q v*) Since the close of the mediaeval period of Islam about the end of the twelfth century of the Hijra (synchronizing with the downfall of the Mughal Empire in India, middle of the eighteenth Christian century) the influence of Europe on Islam has acted in two ways Non-Moslem interests and ideas have obtained more and more recognition in lands under Moslem sway and many large groups of Moslems have passed under the sway of non-Moslem Powers Previously the extinction of Moslem rule in a country had meant either the extermination or the withdrawal of the Moslem population Now Islam took its place side by side with other systems—religious political social and educational—and the necessary adjustments began and will take a century or two yet to carry out Most of the European Powers have Muslalman interests or spheres England in India Egypt Southern Persia East Africa and Nigeria France in Algeria Morocco and Tunis Russia in Central Asia Northern Persia and the littoral of the wave of the old Moslem advance Holland in the Malay East Indies Italy in Tripoli and Austria and the Balkan States in fragments of the old Turkish Empire Under each of these States Moslem education takes its colour from the national characteristics of the dominant people

In addition to and connected with these political developments there has been a radical change in the balance between the thought of the East and the West and a strong re awakening of Islam from within

The change in the balance of Eastern and Western thought is best seen in the growth of Christian Missions to Mohammedans Practically the whole of the higher education of the modern type in Turkey and Persia is controlled by Christian missionaries—Roman Catholic and Protestant Though these admirably equipped colleges in Turkey several of them incorporated under the laws of Massachusetts and New York in the United States of America mainly educate the Christian *millats* of the Ottoman Empire and even some of the non-Ottoman Greeks, Serbs Bulgars, and Armenians, their influence on Mohammedan institutions is very considerable Missionary influence is also active in Moslem institutions in Northern Africa, including Egypt, East Africa India China and the Asiatic Archipelago In the education of girls in all Moslem lands the missionary agency is in all countries most active, and in some countries is in advance of State agencies The result is a rapidly increasing approximation in Mohammedan educational ideals to those prevailing in Europe and America

These remarks require slight modifications in the light of after-war events Educationally, the break up of Turkey may possibly drive the Angora Government into a strong nationalist policy The French mandate in Syria, the British mandate in Palestine, and British influence in Mesopotamia, and the kingdom of the Hejaz may reflect themselves in new educational movements whose trend we cannot yet forecast

The Women of Modern Islam. The modern awakening of Islam is nowhere more strikingly exemplified than in the modification of the position of woman in society and education The position of the first women in Islam—Khadija, Fatima, and Ayesha—rendered the legal status of women sufficiently secure but their *actual* status deteriorated until the recent awakening brought the question to the forefront The newer and more vigorous sects, which are rising all over the Moslem world, are devoting much attention to this question A woman, Qurrat-ul 'Ain was the corner stone of the Bábi sect in Persia Women also played an important part in the Turkish Revolution The law of Islam allows intermarriage between Moslems and Christians, and the influence of European women who have married Moslem leaders has reacted on the social life of Islam Even more effective has been the European education of the men of power and position in Islam The late Amir of Botkhara, Mir 'Alim was educated in the Cadet Corps at Petrograd A prominent Mullah in Ispahan has a son at school in Switzerland Most of the Turkish leaders have been educated in Europe The most prominent families in India and Egypt send their sons (and increasingly their daughters) to be educated in England While all this tends to the raising of educational ideals it retards the development of indigenous institutions in Moslem lands

The Development of Indigenous Institutions. It is such indigenous institutions that will mainly achieve the educational salvation of Islam Through them alone can the different national vernaculars be made the instruments of popular education The fight between the classical language Arabic and the various national vernaculars is passing through the same phases as the similar fight in the European educational world The best example of Moslem national autonomy in religion and education is to be found in Bosnia where the organ of the National Society of Mo allims (Moslem teachers) is published in the Serbian vernacular written in an adapted Arabic alphabet But apart from the question of the alphabet or the local vernacular, all Moslem lands are attempting to grapple with the educational problem in three ways First, the traditional Moslem institutions are being modernized, and brought more and more under State inspection and control This applies especially to the Maktabs or Koran schools, the traditional primary schools of Islam But the Madrasas, or high schools and colleges as well as ancient university foundations, like the Azhar in Cairo are also being everywhere reorganized and brought under the influence of modern ideas Secondly, new Moslem schools colleges and universities are everywhere being founded or projected These are meant to be entirely on modern lines, with the addition of special religious courses or faculties The Aligarh College in India, the Gordon College in Khartoum, and the Shah's College in Teheran, are examples The educational project of Sultan Abdul Aziz for the Ottoman Empire was one of the most comprehensive measures of its kind ever devised, but it has never had a chance As to universities that at Constantinople exists on paper the projects for both Constantinople and Cairo have long been under incubation The Aligarh University in British India and the Osmania

University in the Nizam's Dominions are now accomplished facts, while the Department of Islamic studies in the new Dacca University (India) is a testimony to the needs of a predominantly Moslem Province Thirdly all States or Governments having a Moslem population mixed with a non Moslem population (with the doubtful exception of Russia) are making special efforts to meet the special educational needs of their Moslem subjects A Y A

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MONASTERIES AND LEARNING —Monasteries as we know, were not founded to serve as academies for societies of savants or to furnish retreats for men of letters Not one example could be cited of any monastery or Order founded expressly for such an object, except perhaps in the cases of Cassiodorus and of the Mechitarists who will be considered later Speaking generally the primary object of monastic foundations is to provide Christians with the means of leading a life more in conformity with the precepts and counsels of the Gospel—a life of separation from the world in solitude and prayer At the same time it must be added that if study is not the *raison d être* of monastic foundations it is by no means excluded from the conception of monasticism On the contrary, it is even presupposed and rendered practically necessary in virtue of the secondary ends which monastic life proposes to itself

Whether work in general and particularly intellectual work is opposed to the spirit of monasticism, and whether it should in consequence be banished from monastic life is no idle question Certain sects —the Euchites and Massalians, for example— upheld this proposition but they were condemned and St Augustine wrote a treatise soon to become law in the Church *De Opere Monachorum* wherein he proved that the monks were rigorously bound by the law of labour This question was taken up later in another form by certain Cistercians who refused to admit any work but manual labour into the monastery, and altogether banished study It arose once more in France in the seventeenth century and gave rise to the celebrated controversy between the Abbé de Rancé, reformer of La Trappe, and the Benedictine Dom Mabillon the most illustrious representative of the Maurist Congregation The former taught that study was not fitting for monks, and endeavoured to support his contention by the authority of the Fathers and monastic tradition Mabillon answered him showing from history that study had ever been held in honour in all the great monasteries, and approved by the holiest and most illustrious among the monks

Work is a law of the monastic life It consists either in the cultivation of land the practice of various crafts or trades the practice of the liberal arts the copying of manuscripts, or in the *lectio divina* that is the study of Holy Scripture of ascetic and mystical theology of the Fathers and of the other ecclesiastical sciences This is laid down in one form or another in the greater number of monastic rules

The fact that a certain number of monks are called to the clerical and priestly states—and that by the express desire of the Church herself—renders the study of theology canon law and the other ecclesiastical sciences an obligation for all This fact reaches back to a high antiquity Originally it is true the monks were as a general rule laymen and there were but few priests or clerics in the monastery But at a sufficiently early date and in the greater number of the monastic orders it became the rule for the majority of the monks to aspire to Holy Orders

The monastic life presupposes as a necessary part of its curriculum the reading of Holy Scripture of the Fathers and the Acts of the Martyrs and other Saints both in choir during the divine office in the refectory and in the cell Monastic usage again ordained that during Lent books should be distributed to the monks to be read—hence the necessity for possessing books in the monastery Before the invention of printing these books had to be copied by hand Thus there were, in the greater number of monasteries workshops for the practice of calligraphy—a *Scriptorium* wherein the monks were occupied with copying the manuscripts and an *Armarium* or library where the books were kept according to the common saying *Claustrum sine armario quasi castrum sine armentario* Some of these libraries became famous

It is to the monastic copyists that we owe the preservation of the treasures of classical literature both Greek and Roman as well as the knowledge of history itself 'Without the monks' says Marsham "we should be as ignorant as children of our national history' These words are as true for France Germany and the other Christian countries as they are for England

The establishment of a school in the monastery was not foreseen by all the monastic rules but it became a practical necessity at least in earlier times owing, first to the fact that many of those who entered the monastery were unable to read and had to be taught to do so, secondly, and especially because almost all monasteries received *alumni*—children whose education was undertaken by the monks Hence arose the claustral schools, many of which became famous

History of Culture in the Monasteries That the principles laid down so far are true is demonstrated by monastic history That history may be said to be one of the most fruitful chapters of the history of culture from the fourth to the twelfth century If after the twelfth century, we must look chiefly to the universities and secular schools for the cultivation of science and literature, the monastic

element, nevertheless, has still a part to play—one which, although of secondary importance, is not to be lightly set aside

"In order to show the active part taken by the monasteries of the early Middle Ages in the literary movement," says Dom Berlière, "it would be necessary to write a *résumé* of the whole literary history of that period Whether it is a question of theology of exegesis of history, poetry, mathematics, or languages the greater number of writers from the eighth to the twelfth century were monks"

We can cite only a few examples here—to go thoroughly into the question would require volumes

EGYPT Egypt may be regarded as the cradle of monasticism under its two chief forms—the eremitical (or anachoretical) and the cenobitical It is in Egypt that we find monasticism under its most austere aspect Yet intellectual work was by no means neglected by the solitaires The narratives of Rufinus Cassian or Palladius the Coptic MSS recently discovered are proof that at Tabennisi as well as at Atripê in the Desert and in all Egypt, the monks studied Holy Scripture the Fathers, theology (both ascetic and mystical) The *Apoph thegmata*, the *Verba Seniorum* the spiritual conferences of Cassian the text of the monastic rules are none of them the work of rude ignorant men but show on the contrary a refined psychology and a high state of culture

At Atripê for example, the abbot gave three catechetical instructions a week to the young monks, all were obliged to study the Holy Scrip tures unlearned members of the community were taught to read and books were distributed to the monks and to passing guests The Coptic documents recently discovered (papyrus and ostraka), of which mention has just been made, provide a very curious catalogue of books attesting the existence of libraries already well provided in certain of the monasteries in Egypt

SINAITIC PENINSULA In this peninsula where Egyptian monasticism soon spread and where study was by no means neglected there existed several flourishing monasteries St Nilus Sinaiticus and St John Climacus the two great teachers of asceticism were the chief glory of these monasteries

PALESTINE The monastic foundations in Palestine were no less famous It is enough to quote the names of Hilarion of Gaza, Melania the Elder of the Mount of Olives, Paula and especially St Jerome and Rufinus in order to call to mind a literary and intellectual movement that holds a place of its own in the history of Christian letters The history of Biblical geography, the textual criticism of Holy Scripture, the study of Greek and Hebrew and of ecclesiastical literature, were all held in high honour

SYRIA AND CAPPADOCIA These two provinces bring to mind the names of the great doctors of the Church—Basil Gregory Nazianzen, Ephrem and Aphraates—who cultivated theology the study of Holy Scripture poetry and eloquence—not disdaining even profane literature St Basil the great legislator of the Eastern monks, whose rule has been, and still is even in our own day, the guide of practically all the monks of the East, wrote a treatise on the usefulness of profane study for young people and the dispositions required for such study, he encouraged study in the monastery in a very large-minded way, and St Gregory Nazianzen his contemporary, shared his ideas on this subject

CONSTANTINOPLE AND MOUNT ATHOS The monks of Constantinople followed the instructions of St Basil with regard to study In the academy founded in that city in the fifth century, under Theodosius II, the teaching was carried on by monks The Acemetoi, who, with their founder Alexander, held the same principles regarding intellectual work as the Massalians soon returned to more traditional views, and from the fifth century onwards possessed in their monastery a library renowned for its riches and for the purity of its texts both of the Fathers and the Councils The Monastery of Studium became a well-known school for learning, and Theodore the Studite, who in the eighth century was its greatest teacher, used every effort to incite his monks to study

St John Damascene, monk of St Sabas at Jerusalem exercised over ecclesiastical studies in the East an influence almost equal to that of St Thomas in the West

The peninsula of Mount Athos where, even as early as the ninth century monasteries were founded which afterwards grew and flourished, cannot nowadays be considered to be a great centre of intellectual culture But the treasure of ancient MSS which have accumulated in the libraries of the Holy Mount, copied for the most part in the monasteries, recalls a time when ecclesiastical studies were held in honour, and history tells us of the influence exercised in earlier days in such matters by certain monks of Mount Athos

IN THE WEST In spite, however, of the renown attaching to the names of individual monks and monastic schools in the East, it must be confessed that there monastic culture never attained to the same degree as in the West After the schism of Photius especially the Eastern monasteries declined rapidly so far as this question is concerned, and from the eighth century down to our own days, the monks with certain distinguished exceptions, would seem to have forgotten that by their voca tion they were actually called and predisposed to cultivate the sacred sciences, and keep themselves up to the intellectual and theological level of the times

It was quite different in the West The origin of monasticism in Western Europe is bound up with names such as those of St Athanasius, St Jerome, Eusebius of Vercelli St Ambrose, St Augustine, St Peter Chrysologus, Ennodius, and St Paulinus of Nola, some of the greatest among the doctors of the Church, who inculcated by their example and by their doctrine the necessity of high intellectual culture

In the following period, we have as illustration the names of Cassiodorus, who founded at Vivarium a celebrated library and a regular school of erudi tion and of St Benedict, who, in his Rule, sets aside certain hours for study, and whose disciples carried Latin culture with them into Gaul, England, Germany, and, in fact, into most of the countries of Europe

It was especially in England that, during the eighth and ninth centuries, monastic learning underwent its most notable development Theodore, who became Archbishop of Canterbury in 668, brought over to England the knowledge which he had acquired at Athens of Greek philosophy, canon law and medicine He had a lasting influence upon the monastic schools of England In Benedict Biscop we have the type of the learned monk continually travelling in search of knowledge He went

to Rome six times and brought back to his own country precious manuscripts bought in Italy He founded the libraries of Wearmouth and Jarrow, which monasteries became veritable homes of learning From thence sprang the school of York, where Alcuin studied before going to teach at the Court of Charlemagne, the science he had acquired in England Aldhelm, likewise a monk, was also renowned for his knowledge of letters of the sciences and the arts Finally Bede who is one of the glories of these monasteries may be said to sum up in himself all the learning of his time

Almost contemporary with Cassiodorus and St Benedict is the Monastery of Lerins, which was for centuries one of the chief homes of culture in the West St Hilary of Arles Vincent of Lerins St Eucher Salvian, Faustus of Riez St Caesarius of Arles all came from this school, which was, in fact a nursery for the bishops of Southern Gaul

While the sons of St Benedict were founding schools and libraries, the Celtic monks disciples of SS Columba and Columbanus were spreading beyond the confines of Ireland and were also engaged in founding those monasteries and schools which have remained famous under the names of Iona Lindisfarne Luxeuil St Gall and Bobbio

The greater number of these pilgrim monks were possessed by a great zeal for science copied innumerable MSS , bought others in the course of their travels and founded libraries like their rivals the Anglo Saxon monks

In Spain although the monastic order does not offer proofs of a culture so general or of so high an order as that in Gaul or England still the monasteries had the glory of furnishing the Church with great doctors such as SS Leander Isidore, and Martin of Braga These saints gave to the monks of Spain their monastic rules which were followed there until replaced by the Rule of St Benedict

In the seventh century Valerius bibliophile and schoolmaster traveller and anchorite may be regarded as the Benedict Biscop of Spain

The intellectual movement in the monasteries checked for a time by the Barbarian invasions sprang up again with renewed vigour under the influence of Charlemagne who was anxious to restore in the monasteries together with regular observance the love of study also With the help of Alcuin the celebrated master of the school of York he founded schools in most of the monasteries and encouraged the work of copying manuscripts It is to this influence of Charlemagne, whether directly or indirectly, that the rise of schools such as those of Corbie St Riquier Metz Fulda Reichenau Stavelot and Tours is due Many capitularies have as their object the erection and direction of these monastic schools

The Middle Ages The century that followed this restoration of Charlemagne may be regarded, from the monastic point of view as a period of decadence The Normans like the Danes in their invasions both into England and France burned pitilessly manuscripts, charts and entire libraries, and left the monasteries in ruins In spite of this, however, we may make honourable mention even at this time, of the school of Bec with its illustrious masters, Lanfranc and St Anselm of that of St Gall which had arrived at the culminating point of its development with Notker and the Ekkerhads, of the schools of Glastonbury Winchester, and Ely, under St Dunstan Finally the name of Gerbert comes before us, who, brought up in the monastery of Aurillac, became pope under the name of Sylvester II and may be regarded as the greatest "savant" of his day

The tenth century is also distinguished by the establishment of the great monastic reform of Cluny, which restored to the monasteries, together with a stricter observance of the rule the cultivation of *belles lettres* science, and art The history of the Cluniac reform is not only one of the most glorious pages of monastic history as a whole, but of its literary history in particular Some among the Abbots of Cluny—St Odo and Peter the Venerable, for example—stand in the first rank of the learned men of their time and they greatly encouraged intellectual work in the monasteries attached to the Reform

The Reform of Cîteaux in the eleventh century was characterized from the beginning by greater austerity than that of Cluny Nevertheless even though manual labour was certainly regarded as more important intellectual work was not neglected St Bernard who was practically the second founder of the Cistercians more than once praises study in his works St Stephen Harding too the third abbot of Cîteaux was one of the most learned men of his century

The eleventh century was a period of renaissance for the monastic order At the side of Cluny now at the height of its glory and of Cîteaux soon to take its place we see the eremitical life—for so many centuries reduced in the West at least to quite a subordinate place—coming again into prominence The Camaldolese (1012) the Vallombrosians (1039) the Order of Grammont (1074), and especially the Carthusians (1084) are the expression of this new tendency and in them the eremitical is combined with the cenobitical life As with the Cistercians so with the above Orders the chief object of their institution was not the pursuit of study Still intellectual work was not by any means condemned Each one of these Orders in its respective Annals is proud to recognize among its members a certain number of learned men doctors, theologians and historians The same may be said of the other branches that in the thirteenth century were detached from the Benedictine tree—such as the Sylvestrines, the Celestines, and the Olivetans

The fourteenth and fifteenth centuries cannot be regarded as very brilliant periods in monastic history and we do not find in them any foundation of great originality But in the sixteenth century under the influence of the Catholic Renaissance the monasteries were reformed and adopted the regulations laid down by the Council of Trent Ignorance and idleness were driven out of the monastic houses in some, schools were opened and studies were taken up again with renewed vigour

Modern History It was however, in the seventeenth and eighteenth centuries especially that, with the reformed congregations of St Vannes and St Hydulphe in Lorraine and of St Maur in France intellectual work in the Benedictine Order took up a position of remarkable distinction These congregations without neglecting strict monastic observance, organized their studies in the greater number of monasteries methodically, and founded a school of erudition which has never been surpassed Archaeology Chronology Numismatics, Diplomatics Textual Criticism the editing of the Fathers, Councils and Ecclesiastical Writers the study of

the Middle Ages and of Classical Antiquity, of Theology Lexicology, Hagiography Monastic and Civil History Liturgy Holy Scripture, Literary History—on all these subjects the Benedictines have left works that can never perish, they have laid down the true principles of erudition and historical criticism and are, in fact, the true precursors of the historical school of the nineteenth century The names of Luc d'Achéry, of Mabillon Constant, Ruinart, Martianay, Montfaucon, Massuet Ménard, Martène St Marthe, and Calmet will for ever be honoured in the history of erudition

The Mechitarists founded by Mechitar in 1749 belong to an Order of the Armenian Church established in Europe (on the island of St Lazzaro near Venice and at Vienna) which has as its object the study of the ecclesiastical sciences especially in connection with Armenia They have edited or translated very many works, and their school has rendered very great service to ecclesiastical history

The French Revolution destroyed all the monasteries without any regard for the services rendered by the monks to the cause of science In the nineteenth century some efforts were made to restore them but if the new Benedictines heirs of the traditions of Cluny and St Maur have followed but timidly in the footsteps of their ancestors, some of their monasteries at least have given proof that the example of these ancestors has not been altogether forgotten

The name of Cardinal Pitra and those of Cardinal Gasquet and his *confrères* to whom Pope Pius X entrusted the charge of revising the Vulgate the names of Abbot Butler, of Dom Connolly Dom Morin Dom Berlière Dom Leclercq, Dom Cagin Dom Wilmart and many others bear witness that the heirs of the monks of old have not renounced that heritage of science and erudition that was the glory of the monastic Order in ages past F C

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MONASTERIES, EXTERN AND CLAUSTRAL SCHOOLS IN—It has been often shown, and is admitted by every historian that there were schools in monasteries that these schools were numerous and that together with the episcopal and cathedral schools they were the only educational establishments in those centuries known as the Middle Ages—and especially from the eighth to the thirteenth century But historians although they admit this fact pretend that the monastic schools were intended for the education of the monks and novices only, or at least of the *oblati* (*i e* those who were destined for the monastic life)

Although this question has never yet been treated in a complete and satisfactory manner nevertheless, it is possible to quote a certain number of texts which prove that if some schools in monasteries were intended only for monks and ecclesiastics, there were a good number where one found, side by side the claustral school and a school for externs If the number of texts which have been discovered up to the present is not very large, this is easily understood in the case of a subject which is either scarcely considered in the history of the institutions, or hardly ever alluded to in the chronicles

Before Charlemagne St John Chrysostom (*Adv oppugn Vitae Monast*, P Gr Vol XLVII col 379 *seq*) seems to suppose that monastic schools are open to all The scriptoria of the Greek monasteries were strictly speaking schools of calligraphy and cursive writing and other arts connected with the copying of manuscripts The famous monastery of the *Studion* at Constantinople is the most celebrated from this point of view The schools of Saint Victor at Marseilles in the time of Cassian and that of Lerins under the successors of St Honoratus both of this class are among those which enjoyed a great celebrity In the sixth century Cassiodorus founded a true " monastic college " at Vivarium in Calabria, and he himself wrote treatises on the method of teaching grammar arithmetic, and the other arts The school of Braga in Spain is the most ancient that is known, and those of Seville and Saragossa also attracted a great number of students

During the seventh and eighth centuries we come across many persons who had been educated in the extern schools of the monasteries, for example,



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PLATE LXIV

Luxeuil Canterbury and York With reference to these students we find the following mention in the life of St Wilfrid—

"Principes saeculares viri nobiles filios suos ad erudiendum sibi dederunt, ut aut Deo servirent si eligerent aut adultos si maluissent, regi armatos commendarent

(*Vita S Wilfridi* N 20 *ap* Mabillon, saec IV benedict P I p 688)

Under the Merovingians also we find mention of princes and sons of kings who were brought up in the monastic schools (Mabillon *Annales*, Vol III, p 54) In the Isle of Jersey abbot Maglorius superintended the education of the young nobles (Mabillon *Acta hist O B* Vol I p 228) The schools of the Anglo Saxon monasteries of England especially those of York Peterborough Rochester Evesham Abingdon and Ramsey were open to all comers besides the sons of the nobility The witness of Bede leaves no room for doubt in regard to the schools of Wearmouth and York (*Hist eccl*, Vol II) The schools attached to the monasteries of Winchester Reading Bury St Albans Hyde and Winchcombe had likewise the character of a public school Alfred the Great encouraged the foundation of schools which recalled the great traditions of the time of Charlemagne

The Celtic monks even more than the Anglo Saxons are famous for their love of learning The schools which they opened at Glastonbury as well as those of Bangor in Ireland, Iona Lindisfarne, Luxeuil, and Bobbio, made no distinction as to class and their teaching is remarkable for its breadth of view

Under Charlemagne and Since Charlemagne took good care that in his kingdom the monasteries should be centres of teaching In 789 he wrote his celebrated *Constitutio* which ordered that each monastery should contain a school where children might learn the psalter plain chant the elements of arithmetic and grammar The influence of Charlemagne made itself felt to a similar degree throughout his vast empire Theodulphus Bishop of Orleans, notified to his clergy that if they wished to have any of their relations educated they might send them either to the episcopal school of Sainte Croix, or to the monasteries of Saint Aignan or Saint Benoît sur Loire among others

It would seem that St Benedict Anian wished to restrain this movement He was anxious to restore the primitive rule of St Benedict to keep the monks enclosed in their monasteries and in order to do away with all that might hinder the austerity of the monastic life he persuaded the Council of Aix la Chapelle in 817 to decree that no one should be admitted into monastic schools except monks and oblates Many authors are of the opinion that it was from this moment that the distinction arose between the claustral schools set apart for the monks and oblates, and the extern or *canonical* schools for clerics and students who did not belong to the monastery But it does not seem that St Benedict's influence was very great Dom Berlière in a general account of the monasteries of France Belgium England Germany and Spain is able to quote quite a number of schools where instruction was given to outsiders as well as to the oblates of the monastery (*loc cit* p 504 *seq*)

At Saint Mihiel sur Meuse Gorze, St Vincent of Metz, Luxeuil, Troyes, Fleury-sur Loire St Riquier (*Centula*) St Remy at Reims, St Germain d Auxerre and Marmoutier—from the ninth to the tenth century—there flourished schools where a careful education was given to the pupils

In the life of St William abbot of St Bénigne at Dijon we find these words "The holy abbot wishing to counteract the ignorance and the relaxation of the secular clergy of Normandy and the other provinces of France opened schools in his monasteries (Fécamp Bèze, Dijon etc) where learned brethren gave instruction unto all such as presented themselves and this without fee or charge Sons of free men or serfs, rich or poor—no one was refused access The latter, moreover, were fed at the expense of the monastery Later on one saw many of these children clothed in the religious habit and it was not long before the fruits of such a useful measure were gathered in" (*ap* Mabillon *saec VI bened* P I, p 327)

Saint Médard of Soissons Saint-Martin of Tours St Germain des Prés, Saint Denys Saint Riquier, St Martin of Metz Fernières are monasteries where there were schools open to laymen as well as to oblates One of the councils of Paris ordered that the monasteries should open schools for the monks and for the clergy The school of Bec with its masters Lanfranc and Anselm is one of the most celebrated of the Middle Ages and pupils flocked there from all countries But Cluny remained faithful to the influence of St Benedict Anian in this respect as in many others No layman was admitted to its schools the teaching was reserved for monks and oblates And it was the same in the greater number of monasteries founded from Cluny and in those which adopted its reform

Turning to Belgium the great and famous monasteries of Stavelot Gembloux Saint-Trond Hautmont Saint Martin of Tournai and Lobbes also opened schools where instruction was given to strangers and laymen, as well as to monks (*Berlière loc cit* p 508)

Germany was in no way behindhand Who has not heard of the schools of St Gall Fulda Reichenau Limbourg Hirschau, Seligenstadt, Hildesheim and St Emmeram or those of Kremsmunster Gottweig Salzburg Melk and Seitenstetten in Austria?

If Italy and Spain do not furnish so many examples we must not forget to mention the names of Monte Cassino and the many other schools that were open to all indiscriminately (*e g* San Juan de la Peña and San Millan de la Cogolla)

From all this evidence Montalembert thought that one might say that the education of the young was the chief occupation for monastic activity Dom Berlière without accepting this statement as absolutely correct recognizes nevertheless that public instruction until the thirteenth century was concentrated almost entirely within the cloister and that it was given unreservedly to all who claimed it

The birth of the universities in the thirteenth century must necessarily have been a fatal blow to the monastic schools as well as to those of the cathedrals Being unable to hold out successfully against this superior learning, the monks often sent their oblates to the universities founded colleges for their students and often achieved fame there themselves by their teaching

It will not be out of place to remark here that the two great universities of Oxford and Cambridge doubtless owe their existence to the monastic schools Grimbald, prior of St Bertin was called in by Alfred the Great to lecture at Oxford, whither

he drew many scholars As to Cambridge, we may take it that it originated in the schools founded by the canons and the monks in the twelfth century, where they taught grammar, Aristotle s logic rhetoric, and Holy Scripture

The Councils of the Lateran in 1179 and 1215, and that of Trent (sess XXIII), likewise made regulations concerning monastic schools After the beginning of the sixteenth century religious orders arose which have for their end the foundation of schools and the teaching of the laity F C

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MONASTIC LIBRARIES—(See LIBRARIES BEFORE THE SEVENTEENTH CENTURY)

MONGE, GASPARD (1746–1818)—Born at Beaune was the creator of descriptive geometry He learnt mathematics from the Oratorians of his native village, studied in a military school, and, as a result of successful solutions of military problems, became teacher of mathematics in military schools, in the Normal School at Paris, and in the École Polytechnique (of which he was one of the founders) His numerous writings are chiefly on geometry and applied mathematics

MONGOLISM.—(See MENTALLY DEFICIENT CHILDREN)

MONISM.—This is a term applied to any philosophic system which regards the universe as the manifestation of a single principle The term is used in a somewhat narrower sense in connection with the attempt to explain the relation between mind and body—to express the theory that only one principle exists, which in the case of Materialism is regarded as matter while in that of Idealism it is looked upon as mind

In modern writings Monism is used to designate what is known as the ' Double Aspect " Theory This is a special form of the theory of Psychophysical Parallelism (*q v*) and regards mind and matter as two aspects of one unity Based upon the Monism of Spinoza it assumes that each particle of matter has a psychical aspect It is really a metaphysical theory and represents the world of consciousness and the world of matter as parallel representations of one underlying substance and body and mind as but parts of this larger whole Monism is the ideal system of philosophy, but the apparent contradictions of experience make it difficult to accept The modern scientific view known as the electrical theory of matter may go far to establish the philosophical hypothesis of Monism M J R

MONITOR.—Monitors are now found only in remote villages in England where facilities do not exist for the training of rural pupil teachers or where a teacher in charge of a small school needs some assistance in looking after a few infants while she attends to the older children About a hundred years ago the shortage of teachers was far greater than it is now One adult teacher often had the sole management of a school of 200 children

In the belief that a little instruction is better than none the National Society and the British and Foreign Schools Society (*qq v*) endeavoured to supplement the services of the adult teachers by those of some of the older children, under the name of " Monitors '

The monitors did little more than repeat lessons which they had previously learned from the master They received no training in teaching, and, even when they were paid a small salary, they were not encouraged to regard themselves as being on the threshold of a worthy profession It is easy to believe that their duties were discharged in a mechanical and lifeless manner, and, when we find that some of the monitors were only 8 or 9 years of age we can only marvel at the superb faith in the value of the curriculum which was manifested by the subscribers to the two societies named above

It is worth while to notice two facts which the Monitorial System emphasized (1) That supervision of young teachers needs special skill, (2) that the curriculum is not the first consideration in education Neither of these two facts has yet been appreciated in its fullness but it is certain that the more consistently they are applied, the better will be the result A C C

MONITORIAL SYSTEM.—(See PREFECT, MONITORIAL AND PUPIL-TEACHER SYSTEMS THE HISTORY OF)

MONTAGU, LADY MARY WORTLEY.—(See "BLUE-STOCKINGS" AND EDUCATION, THE)

MONTAIGNE, MICHEL DE (1533–1592) —He was born in Guienne, and educated at Bordeaux where he became member of the local parliament in 1557 He began to write in 1567, translating Bunel's *Theologia Naturalis* and a few years later shut himself up in the tower of the Château of Montaigne with the intention of devoting the remainder of his life to study meditation and writing His favourite authors were Plutarch and Seneca whom he studied more from a philosophical than from a literary standpoint The first edition of his *Essays*, which have rendered his name famous appeared in 1580 and immediately afterwards he travelled through France and Italy for eighteen months, returning to hold office as Mayor of Bordeaux He died of quinsy after a sudden and short illness Montaigne's *Essays* are amongst the most famous of literary productions They are the result of desultory reading and thinking not arranged in any definite order nor displaying any definite purpose but they have exercised an influence on French literature perhaps greater than that of any other book The want of formal arrangement tends to give the *Essays* their peculiar value and Montaigne does not profess to give information, but 'fancies of my own They range over every subject of human interest are full of droll, sarcastic, and acute observations often of great depth and cannot fail to entertain and delight even the most fastidious reader

MONTENEGRO, EDUCATION IN —As might be expected in the case of a mountainous country which has had to fight for its existence for so many hundreds of years education in the modern sense of the word has come to Montenegro comparatively recently Until the latter part of the first half of the nineteenth century education was practically synonymous with training for war Love of country, regard for truth, discipline, skill in the use of arms were inculcated at every turn one side of the character being developed by the recital or improvisation of the *pjesme* or ballads often sung to the accompaniment of the *gusla* recounting incidents of a glorious past

Peter the Second the last of the Prince Bishops of Montenegro who is regarded by many as the greatest of Serbian poets set up a printing press from which were issued in 1834 and following years various works of historical and literary interest, which helped to prepare the way among the few for the spread of education among the many That enlightened ruler owed his early training to Sima Milutinovitch the historian, a native of Ragusa who had established at Cettinje in the time of the Vladika Peter the First, a private school which was the forerunner of other schools to come Out of three schools which were brought into existence during the reign of Peter the Second only one survived at the time of his death in 1851 His nephew and successor, Danilo, also endowed with poetic gifts, arranged a system of tuition in the palace itself for youths belonging to the more notable families Most of the educational progress achieved in Montenegro falls however, within the reign of the late ex-King Nicholas, who, ever since he became prince in 1860, has done his best to promote and diffuse education Himself an author and poet he has encouraged literary tastes in others without neglecting either military training or the more modern and practical branches of knowledge likely to be of use to the people

First Educational Institutions. The year 1869 was marked by three important advances—

1 The establishment of the BOGOSLAVIA, a combined seminary and training college for clergy and teachers,

(2) The foundation of the JENSKI CZERNOGOISKI INSTITUTE or VICHEJENSKA SCHKOLA a high school for girls and

(3) The introduction of about thirty Serbian schoolmasters for the purpose of organizing elementary education

(1) The Bogoslavia's first home was at Cettinje, but after some years it was divided into two, the seminary for the clergy being removed to Ostrog The first head was Milan Kostics, of Hungarian nationality, though of Serbian origin, who remained three years at Cettinje and trained more than forty schoolmasters during that time The Czar of Russia agreed to subsidize the institution The number of pupils in training for the scholastic profession has averaged about forty of recent years

(2) The High School for Girls at Cettinje was assisted financially by its patroness, the Empress of Russia while the Queen (then Princess) of Montenegro herself exercised supervision The first head mistress was a Russian lady The number of pupils has been about seventy five at a time There is abundant evidence of the excellent results both direct and indirect, produced by this school

(3) The schoolmasters from Serbia were sent at once into the various *nahie*, or districts, where they began the work of educational organization in elementary schools on the model of what was at that time the curriculum in Serbia other subjects being added in 1878 and a further revision taking place in the present century Their work was soon supplemented by that of the Montenegrin teachers trained at the *Bogoslavia* The Montenegrin boys, being quick witted and receptive were eager to learn Kostics tells the story of five schoolboys of Cettinje who went to see the Prince in the early days of the new system, and complained that they were being badly taught "How do you know this?' asked the Prince "We have just returned from the Bazaar at Rjeka" they replied referring to another town in Montenegro "and the boys there can read write count and do many other things of which we know no more than sheep We may be the nation's lambs, but we do not want to become its sheep"

Elementary Education. The spread of elementary education since that time has been very remarkable The primary schools a few years ago numbered about 190 of which more than 160 were maintained by the State, and the rest, principally Roman Catholic with the addition of a few Mohammedan schools by their respective denominations Religious instruction in the State schools was given in accordance with the tenets of the Orthodox Eastern Church the syllabus being approved by the Vladika In the Roman Catholic and Mohammedan schools, religious instruction was supervised respectively by the Archbishop of Antivari and by the Mufti There were approximately 200 teachers and more than 10,000 pupils, but, at present, official figures are not available, and it is uncertain to what year this estimate

relates, though in all probability the year is 1910 Monastic life having almost entirely died out in Montenegro, the revenues of the monasteries were applied to educational purposes, supplemented by a Government grant and, in the case of towns, by small fees In the country districts, education was entirely free and in towns the fees were more of the nature of voluntary payments on the part of those who could afford them so that practically, education was free throughout the little kingdom It was also compulsory, at any rate nominally alike for boys and for girls, but the proportion of illiterates to the total population was still considerable ten years ago Allowance had to be made for the special circumstances of each district In some the schools could be held during the greater part of the year in others only in the winter months Difficulties arose in the early stages owing to the jealousies of the clans, or aggregates of house-communities but these were overcome when the central administration was more completely organised There is (or was) a Minister of Public Instruction at Cettinje, with a department of his own but the office has usually been combined with that of Minister of Justice

Secondary Education In addition to the elementary schools, secondary schools were established at Cettinje and Podgoritza with twenty-one teachers and about 1 000 pupils between them The former was more of the nature of a *gymnasium* for general knowledge and culture the latter more of the nature of a *real gymnasium* for technical, agricultural and commercial instruction In addition to religious knowledge, the curriculum at both schools included Serbian language and literature, one foreign language (usually French or Italian—Latin, if desired), geography, history, mathematics natural history, physics chemistry, drawing, physical exercises and drill, more attention being paid to literature and history at Cettinje and more to science at Podgoritza There were also opportunities of learning English German and Russian but the present writer does not know whether this was through private tuition or as extra subjects in the schools Thousands of Montenegrins must have acquired some English in America where they have worked as miners and in other capacities Latin and Greek were taught at the *Bogoslavia*, but apparently as optional subjects not often chosen An agricultural school was established in the '70's at Danilovgrad and of recent years a secondary school at Niksitch, about which no information is at present obtainable A system of open air evening lectures dealing with special points of practical interest, such as vine-growing bee-keeping, and tobacco-growing, has been instituted in the low-land villages of Montenegro To these methods of instruction must be added the classes given to recruits of 18 and 19 nor must the military academy at Cettinje for the education of officers, though of a more specialized character, be overlooked It was located in the Baghardo, a former Government building, which owed its name to the sensation caused a good many years ago in the village capital by the arrival and installation of a billiard table within its precincts The little theatre maintained by the King has also had an educative value, both from a literary and from a patriotic point of view

Pre-War Developments. The increase of territory due to the war of 1912–1913 necessitated further provision of schools, but the process of organization was interrupted by the outbreak of the Great War The area of the kingdom having increased from 3,747 to 5,603 square miles, and the population from about 330,000 to about 520,000, the intention was to make the number of schools as far as possible proportionate to that of the inhabitants The admixture of races, languages, and creeds in some of the newly-acquired districts may cause difficulties at first, but probably not of long duration, as there may no longer be a Turkish Government or it is to be hoped, Austrian intriguers to foment dissensions Ipek (Petsch), the seat in olden days of the Serbian Patriarchate, is marked out as the future site of a secondary school, and educational readjustments and developments may be expected in the Montenegrin portion of the old Sandjak of Novibazar, as well as in Djakova and along the border

It will be seen from this sketch that the progress effected both in primary and in secondary education in Montenegro during the past half century has, in view of the special conditions and difficulties of the country been very striking For those who wished to follow a higher course of studies, the only course open thus far has been to pursue them elsewhere In former years some studied in Paris (the King himself was at the Lycée Louis le Grand), some at the St Cyr military school, some at Petrograd and a few at Vienna Trieste, or Ragusa Since 1905 the Serbian University at Belgrade has attracted an increasing number of Montenegrin students F S S

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MONTESQUIEU, CHARLES DE SECONDAT, BARON DE (1689–1755) —Born near Bordeaux, died at Paris belonged to a noble family, and early became a deep student of literature He was instrumental in founding the Academy of Sciences at Bordeaux In 1721 he published *Lettres Persanes* (Persian Letters), a romance full of severe satire on the abuses of French society and the Court of Louis XIV After extensive travels he wrote his *Considerations on the Grandeur and Decadence of the Roman People* His more famous work *De l'esprit des lois* (1748) aimed at the pedantry of laws, and claimed that law should be robbed of its despotism and administered for the common advantage

MONTESSORI MOVEMENT IN ENGLAND, THE. —The character of individuals has been defined as the way in which they would act under given circumstances The character of nations is perhaps similarly revealed by their reaction to new ideas Little could have been more instructive from this point of view than the inspection in Rome of the vast quantities of newspaper cuttings which Dr Montessori received from all parts of the world after the publication of her book *The Montessori Method* Particular interest attached to cuttings from England and America America, prompt, ready to accept, enthusiastic—often superficial—showing a state of furore, England, calm, profound keenly critical, stirred—if at all—rather in the opposite sense, taking up arms so to speak, against the innovation, and fighting a sturdy rearguard action over every inch of ground yielded

It is not too soon to say however, that the Montessori method has now found in England a secure foothold The number of schools in England practising Montessori, or an approach to Montessori, principles must to-day run into hundreds Some

of these are taught by teachers trained by Dr Montessori herself, some five hundred English teachers in all having attended her training courses of four months duration, which have been held at various times abroad and in England Others are taught by those who have merely read her books and have been inspired to try the new method for themselves Many exponents have also arisen to spread the new ideals by lecture study-circle, and informal talk while training colleges introduce lectures on the subject and questions are beginning to appear in the examination papers of students

Such a movement would be bound to seek cohesion and co-ordinate expression in the form of a Montessori Society and this originated in 1912 and reconstituted in 1914 has undoubtedly contributed towards the popularization of the "Dottoressa s work The present Montessori Society of London has for its aim co ordination of the movement and to preserve the integrity of the Montessori method Propaganda meetings are held pamphlets issued and the results of teachers experiences in the schools collected co ordinated and published There are also independent Montessori Societies in Edinburgh Glasgow Liverpool, and Birmingham while a branch of the London Society has been established in Nottingham

It is probable, however that the organized propaganda of Dr Montessori s work has still to achieve its stable and comprehensive form in this country It is not yet generally realized that Dr Montessori has evolved something more than a simple ideal to be sought by a generality of means and that her method is in fact a highly developed product of theory and technique based upon sound experiment with the children Her system undoubtedly needs considerable study for a proper appreciation of the conceptions upon which it rests, and the practical details which are necessary for its successful application Dr Montessori has now published further developments of her methods for older children and also a fuller expansion of her general theory One may consequently anticipate, in addition to a widening of the circle of interest a progressive development of the idea itself emanating from her

The future in this country will no doubt present a conflict of tendencies each of which will find expression in the schools Perhaps the most evident will be that for which we are famous namely com promise But the method is scientific and science does not combine well with not science Hence I venture to predict that in addition to this there will spring up a new school of Pedagogy which will cut adrift from former methods and build essentially upon the Montessori model Dr Montessori is planning to train trainers of teachers and although time and circumstances have not yet permitted this—a work she will undertake with the greatest care considering at least two years study with her to be requisite—we may no doubt look forward in the future to an authorized Montessori training-centre in this country, and from this, schools of the pure Montessori type may be expected to spring C A C

MONTESSORI SYSTEM IN ENGLISH SPEAKING SCHOOLS, THE —The Montessorian System is one of the most interesting contributions yet made to education not so much because it is "new" as because it re states old truths and suggests new applications of old principles and methods Hence, without subscribing to the extravagant claims made by its warmest devotees, we must recognize its importance in moulding future educational thought and practice But since no system can possess a monopoly of all essential principles, or be capable of adjustment to widely varying conditions of race, thought, and practice the policy of wise fusion, rather than of complete absorption, is undeniably the true one, hence a careful consideration of the best means of adaptation of the system to English speaking schools is needed

Montessori schools are now fairly common in England the pioneer school having been established by Mr Bertram Hawker at East Runton Norfolk A Montessori society has been formed, and a training course given by Madame Montessori in London Many Montessori classes are also springing up in the national infant schools and are receiving much encouragement from education committees and officials In many experiments however the method is being applied only partially—to special groups of children subjects, or periods of time perhaps a wise limitation during initial stages but scarcely consonant with certain fundamental principles which are worthy of more universal application

Broadly speaking Madame Montessori offers us four chief lines of reform—

(1) Greater freedom for the child in choice of occupation, with corresponding freedom from irritating interruptions, (2) opportunity for self-education through self corrective exercises (3) suggestions for fuller training and co-ordination of sense impressions especially of the sense of touch, (4) more natural groupings of children by which as in a family, the elder can serve the younger ones

Apparatus Unfortunately the cost of the 'didactic apparatus' is almost prohibitive it is too limited in quantity too formal and too narrow in its range of objective interest for wide use in large classes and schools Young children acquire new impressions and experiences largely through things but it is their use not their form that interests them Hence the apparatus needs supplementing by a richer variety of objects which in his earlier stages the child can handle sort match or draw individually and read and write about as these arts are acquired

Again though there is ample scope for certain definite exercises in which single impressions only are involved (*e g* colour shape, surface weight), still the most fruitful exercises are those which call up the richest variety of impressions and emotions in the mind Children must handle things with intelligent interest and this involves certain types of knowledge not discoverable alone (*e g* names and uses of objects and later names of letters and words, together with the power of correct articulation and pronunciation)

Modifications of Montessorian Methods Obviously, one teacher dealing with 50–60 children cannot possibly give the necessary individual training especially in reading our unphonetic language, hence short collective exercises will be found economical and wise the children applying the knowledge thus gained in their individual exercises

The Montessorian plea for the "tracing" of sand letters and the colouring-in of geometric insets in preparation for writing is probably too provocative to be permanent The instinct for tracing is not so innate as that for handling nor should very young

children either trace or draw single letters conveying no meaning to them the inset work also applied only to geometric forms is mechanical and meaningless, and, moreover involves too fine muscular co-ordinations a hoary and dangerous practice which we have only just abandoned

Infant education too is the period for indirect preparation for future general skill which comes best through natural exercises like drawing and the more plastic arts rather than for purely mechanical exercises preparatory to a specific art like writing Our best adaptation of the Montessorian system in writing will probably lie in the provision of large individual copies gradually lessening in size associated with pictures or objects begun only when children are ready and involving only occasional collective teaching The Montessorian practice of mixing the ages is often adopted, the younger children being largely employed in self-corrective and self suggestive sensory exercises in simple expression work like drawing, modelling and building or in free play with toys dolls and pictures, and the elder children adding to these the "beginnings of reading writing and number" (*vide* Code), requiring more help from the teacher In return the latter give assistance to the little ones Certain limitations apparent in the system must be noted In pursuit of her theory that imagination is based only upon sensory impressions, together with an apparent confusion of imagination with credulity, Madame Montessori postpones all fairy and other nursery imaginative lore whilst her emphasis upon individual freedom precludes concerted action like games and collective singing These valuable aids in developing children s aesthetic emotional and social instincts will not be willingly surrendered or even postponed, by English teachers most of whom will also wish to retain such constructive and inventive exercises as free toy making

Shorn of these joys there is real danger lest young children wearying of the apparatus turn too readily to reading writing and number work thus inducing strain and precocity in formal arts whilst other sides of their nature remain undeveloped Individual work will assuredly progress further in the "Three R's," but disaster will follow if a child's mental life and vision become bounded by his power of expression in the formal arts

By some such fusion of Montessorian and English methods as we have indicated we may hope to achieve true lines of reform, conserving the true function of the teacher whilst minimizing the strain and waste of excessive class-teaching, permitting the child to grow at his own pace without incessant thwarting and interruption, developing in him greater initiative and judgment in tackling new problems and providing for him the fullest opportunity not only for "Learning by Doing" as the Froebelians have it but for "Learning by Doing by One s Self" (*i e* true self-education) C E G

MONTESSORI SYSTEM IN ITALIAN SCHOOLS, THE —The Montessori system of education is named after Maria Montessori a Doctor of Medicine of the University of Rome, who began, in 1907 to experiment in educating normal children in the Via Marsi tenement school in the San Lorenzo district of Rome The tenements had been put in hygienic condition by a building society, and Signor Talamo the managing director invited Dr Montessori to open a school there for the children under the Italian school age of 6 years The primary object was to care for the tenants' children while their mothers were at work, and to teach them cleanly and careful ways so that they should not dirty and damage the new building The schoolroom, made by throwing two or more of the tenement rooms together, is thus in close proximity to the children's homes, and even little ones of 3 can find their way there unattended This *Casa dei Bambini*, or Children's House, as Dr Montessori called it, has a strip of garden accessible through the courtyard, and there the children have gardens of their own Mothers busy in the wash-house can see their children as they pass on their way to the garden and they readily come to the schoolroom to consult the teacher who knows them well

Case dei Bambini In this first Casa dei Bambini, the schoolroom is on the ground floor, in the second, opened a little later in 1907, it is on an upper floor and the rooms open out into a balcony which runs round the courtyard, there is an open-air playground and garden on the flat roof The third is situated in a better-class quarter of Rome—in the courtyard belonging to the flats—next to the tenants' library and reading room Of two later ones, one less well housed is in the San Lorenzo district, the other in the Via Giordano Bruno, where it occupies a prominent central position in a fine open courtyard, the children having a playroom besides the schoolroom and adjacent lavatory In this Casa, and in that in the Via Famagosta, part of the courtyard serves as a garden and playground

The plan of a "school within the home" was imitated by the Humanitarian Society of Milan who have two Case dei Bambini connected with flats in the Via Solari and in the Viale Lombardia on different outskirts of Milan These Case dei Bambini have each two large rooms, baths, and an enclosed piece of ground serving as a garden and playground where the children keep pets The directresses live among the people, whose little ones are under their care all day

Dr Montessori still has a close connection with these schools and recently through her influence highly trained teachers have been appointed to the tenement schools in Rome She is also connected with other schools in Rome the Convent School in Via Giusti and schools, municipal and private for paying pupils some of which use her material for children from 7 to 11 years old In all of these the rooms are spacious and the children have the access to a garden Provision is made for a meal at which the children wait on each other, and assist in preparing the table and clearing up The most recent advance is the adoption of the method by the municipality of Naples and the planning of an Institute in Naples for the purpose of training teachers

Work and Organization of the Schools Certain features are common to all these schools In the first place, all are provided with the didactic material devised by Dr Montessori, and individual lessons in the use of this are given by the directress to the children who want to learn The material is kept in a low cupboard from which the children can take what they want, and in which they replace what they have finished with An assistant helps the directress with the physical care of the children, and she must understand the principles of freedom and independence The children are of mixed ages —3, 4, and 5, with perhaps some few children under

and over these ages The schools have blackboards for drawing and writing Ordinary toys and picture-books, as well as clay or Plasticine are provided, in addition to the didactic material and what is necessary for the exercises of practical life—the dusting sweeping arranging of flowers, care of plants and animals—which are carried on to a greater or less degree in the different schools The school is not complete without a weighing machine and measuring apparatus which enable the directress to make records of the weights and heights as well as sitting heights of the children These, with the records which the directress keeps of the children s work and conduct, throw light on their development There are periodical visits from a doctor and, unless ordered to do so by him, the children need not take a mid day rest in school In Milan they go home to dinner but bring food for a meal about 4 o clock

A novelty in these schools is " the Silence Game " in which for a short time the children inhibit every movement and sound and then go silently to the teacher, when she whispers their names Another is walking to music on a line this aids them in co-ordinating their movements in walking

There are no rewards or punishments and the social intercourse of the children is entirely free The children's friendliness to visitors whom they welcome by shaking hands, is a striking feature, as is also the beautiful writing of quite young children, which testifies to the value both of the method of freedom and of the sand paper letters, by means of which the children acquire motor experiences of the script symbols They learn the script letters first and frequently write and express themselves well in writing before they read, though books are provided Their powers of articulation are carefully trained J WHITE

MONTESSORI SYSTEM IN SENIOR SCHOOLS, THE —At the close of the International Montessori course held in Rome in 1914 Madame Montessori displayed all the advanced apparatus which she had designed for her experimental class of children whose ages range from 6 to 11 years This apparatus was designed on lines following in sequence to the didactic material used in junior schools For example, the long stair used in counting in junior schools is superseded by a stair made of beads, which are more convenient for the children in the senior schools to practise the more elaborate work for which they have been prepared There are ten beads of one colour strung together to represent the number 10 nine beads of another colour to represent 9 and so on In the same way from the nouns used by the infants as a first step in reading, we proceed to the grammar boxes The first box of a series of eight has two compartments containing respectively articles and nouns the second box three compartments one of which has adjectives as well, and so on until in the last box of the series, there are nine compartments containing articles, nouns adjectives verbs prepositions adverbs, pronouns conjunctions and interjections

Teaching Grammar In teaching grammar in the usual way, what is generally considered the most distasteful part is grammatical analysis, because, first a sentence is formed and then it is analysed But if grammar is considered as synthetical as it is in the Montessori method when the child builds up his own sentences with the parts of speech, the task is easy and a real pleasure to him Taking the second box, which is divided into three compartments with article, noun, and adjective written in different colours, the child constructs a sentence. " The pink tower ' The directress removes the adjective, leaving " The —— tower ', then she puts in " green,' " large " or " small," etc , so that the child realizes what the function of the adjective is. She can also alter the position of the adjective, leaving " The tower pink ' so helping the child to realize the place which the adjective holds in a sentence These grammar boxes afford numerous exercises, which are done either by the child himself or with the help of the directress Included in this material there are three boxes of small letters, with stops, exclamation marks, etc in red, black, and white, with which the pupil makes sentences putting in the correct stops He also writes words with the same roots such as *house household* and *housemaid* forming the letters that change in one colour and the roots in another Also he writes prefixes, suffixes diminutives, and augmentatives with these *abc s*

The teaching of grammar is thus carried on in three ways (1) Synthesis practised with the boxes, (2) words formed with the alphabets, (3) lessons given by the directress

The third method consists of commands similar to those used in the teaching of reading in junior schools If " adjective ' is the part of speech to be taught, the directress writes down on a piece of paper a command such as " Take a glass of water fill a test tube half full this is *transparent* ' - (2) " Take a test tube half fill it with water, add to it a few drops of ink this is *opaque* " The pupil actually carries out this experiment and realizes at first hand the difference in the results obtained and the appropriate function of the adjective The directress generally prepares these slips beforehand and gives her lesson the first thing in the morning

The child is not limited to practising the directress's commands, he makes them up for him self The following is an example of one on adverbs, written by a child of 7½, and addressed to his comrades " Walk noisily round the room then sit down as though you were very tired and fall asleep wake up and go quietly back to your place '

Great excitement is caused if the child does not express himself clearly so that the other children fail to do what he has in his mind, and such a demonstration of his mistake is far more telling than the red ink mark of the teacher

Teaching Mathematics To teach mathematics there is provided a number of pieces of apparatus made of beads Chains of beads represent all the squares and cubes of numbers from 1 to 10, so that the child can make comparisons between the different lengths in relation to the numbers, this gives him a concrete idea of the value of numbers For example to demonstrate the square of 2 four beads are joined together on one thread and are twisted round by the child in the form of a square The cube of 2 by eight beads, and so on up to the square and cube of 10

Paper with different coloured lines is used instead of the usual squared paper The unit line is represented by a white line, the ten by a blue line, and the hundred by a red line, then a space follows, with a comma to separate the hundred from the thousand, and then a white line for units of thousands and so on

There are frames with horizontal bars, the first containing ten white beads, the second, ten blue;

and the third, ten red, and so on These frames are used for addition and subtraction This is clearly and briefly explained by the teacher

In teaching the multiplication tables, there are square cards with a hundred indentations on them, and written along the top are the numbers from 1 to 10 At the side is a window into which a number can be slipped Together with the cards are slips of paper which have painted on them combinations of the numbers from 1 to 10, and a jar of beads of one colour The child takes out the number of beads he is going to multiply and puts them into the indentations, writing down the result on his paper Thus if the child has to practise the multiplication of 6 by other numbers, he slips a number 6 in the window and takes 6 beads from his jar and sets them out upon his card in the indentations under the number 1 then he takes another set of six and lays them out under the number 2 and his multiplication sum lies before him by addition of the beads

Then there are papers on which all results of the tables are printed, and the child compares his results with these At the Barcelona School the children were so fascinated by this material that they wanted to take it home and as this was not allowed they told the *Dottoressa* that, as she was experimenting upon them she must provide them with the material, or they would refuse to allow her to continue This was their first attempt at a strike, and spoke highly in favour of the multiplication tables ! The same cards and beads are used for simple division Long multiplication and long division are also taught by means of apparatus but the limits of this article prevent a detailed account of it

Geometrical figures are cut out of tin plate as in the elementary material A square is divided diagonally into two triangles two oblongs four triangles four squares etc The child compares the various figures and can change the two oblongs with the two triangles and find that they occupy the same area and so forth The theorems in Euclid are proved by means of metal insets so that the child can see in the concrete the proof of the theorem

The Experiment at Barcelona. Owing to the difficulty in England, caused by war conditions, of getting the apparatus, and the scarcity of trained teachers (there are only seven in England) very little progress has been made here to prove the worth of the material for children from 6 to 11 years of age In the experiment at Barcelona its value has been proved beyond a doubt—also in several schools in America We in England are behind the times, for anyone who has trained children with it has no doubt of its sound and real educational value The Barcelona experimental Montessori School had been running under the supervision of Signorina Macheronni for nearly a year before the Dotteressa gave the international Montessori course held in Barcelona in 1916 There were twenty children between the ages of 6 and 11 in this school to whom Signorina Macheronni had given the whole course of sensory training for a few months before they were given the advanced apparatus

There was also a Montessori class for children from 2, and a transition class for the children from 5 or 6, in the same building The rooms used by the children being trained with the advanced apparatus were three in number one large one, with a balcony, and two smaller ones—one on each side of the large one leading out of each other Most of the apparatus was kept in drawers or cupboards in one of the smaller rooms, whilst in the other room was the musical apparatus, and in the middle room, light tables and chairs adapted to the size of the children

When the children came in the morning, they went for a few minutes into a little chapel, and then took their places at a table The morning usually began by the " silence game," the children either standing or sitting, and then, unless the directress had any special explanation to give any of them (those who required special instructions, as for example, in some part of speech, she would take aside and give them a lesson with slips of paper already prepared, as above referred to) they would go to the cupboards and get their work In a few minutes everyone had got the piece of apparatus he required and set to work One child will obtain the number frame, and he will do countless addition and subtraction sums, another child writing the sums down on his paper Another will take the packet of verbs and he will interpret these in action (*e g* kneel laugh weep) Another will have the microscope and cut sections of flowers, afterwards reproducing them on paper Another will be teaching long division to one or two who want to do it Another will be designing and so on Occasionally the directress gives a ' lesson " to the whole class After she has finished, some desire to go on with the subject, whilst others resume their original work The afternoon is chiefly devoted to designing, drawing, singing, dancing painting, and so on

Whilst the children are working in groups the directress goes from one to another—advising helping and setting new problems During the course of observation several of the children mastered their multiplication tables two or three were initiated into long division and multiplication and all of them could add, subtract and divide With the grammar boxes they were taught Italian Castilian, Catalan, and French and most of them spoke these well Several of them did problems in geometry, having previously mastered the axioms Some of the designs, both natural and geometrical were extremely beautiful and showed great taste The whole atmosphere of the school was one of joyous work carried out in a social and orderly fashion

St Vincent de Paul once, on entering Paris found one of the miserable derelicts torturing a little child, and breaking his limbs in order to excite pity and thereby obtain alms The saint threw himself on the man and snatched the child away from his hands, saying " O monster, from a distance I thought you were a man ! " To-day there are no longer parents who torture their children in order to excite pity, there are no longer teachers who, with stick in hand, vent their ill-humour on the shoulders of children who are dense but, when one thinks of the way many parents and teachers treat children, imposing upon them impossible tasks, thereby causing maladies such as spinal curvature and myopia, it seems that the Dottoressa Montessori is the St Vincent de Paul of modern pedagogy, who, taking the infants from such parents and teachers, says " O monsters ! from a distance I thought you were parents and teachers Stop ! I bring to you Science united with love in my method whereby your

children will develop their faculties in the most natural and perfect way possible Here it is ! "

Readers who wish to pursue this inquiry should read volumes I and II of *The Advanced Montessori Method* A P-C

MONTPELLIER, THE UNIVERSITY OF —The earliest professor whose name has been preserved was the celebrated Italian scholiast Placentin who died in 1192 Statutes were given in 1220 by Cardinal Conrad to the school of medicine and to the school of arts in 1242 by Bishop Jean de Montlaur Pope Nicholas IV by a Bull dated 26th October, 1289 collected the various schools into a *studium generale* This Bull the University regards as its charter, it made Montpellier a centre of learning comparable to Bologna or Paris

The medical school practised anatomy in the fourteenth century Henri IV endowed it in 1593 with a botanical garden the oldest in France and with a Chair of Botany and in 1596 with a Chair of Surgery supplemented later by a school of dissection In 1662 the college of pharmacy became a genuine faculty The old school of medicine boasts a long line of illustrious masters and scholars Rabelais among them It was also distinguished for fidelity to the Hippocratic doctrine of vitalism—whence the inscription over the gate " Olim Cous nunc Monspeliensis Hippocrates "

The school of law in 1262 numbered 13 professors and 1 000 scholars Statutes were given it in 1339 by Cardinal Bertrand de Deaux But it declined rapidly, and in 1362 had only 200 students, later fewer still Pope Martin V in 1420 attached to it a faculty of theology In the sixteenth century it recovered some of its vitality which it preserved until its abolition

The school of arts in the seventeenth century was identified with the College of Jesuits

All the faculties and colleges were suppressed on 15th September 1793 by the Convention with a view to reorganizing public instruction A school of health was founded in 1794 and became in 1803 the faculty of medicine In 1803 the school of pharmacy was founded in 1809 the faculty of science in the same year the faculty of letters suppressed in 1816 but re established in 1838 and in 1878 the faculty of law These became the University of Montpellier by the law of 1896

The University now numbers 62 regular professors, 53 assistant professors fellows and lecturers and 21 directors of studies Its equipment includes three hospitals with 3 500 patients a year a magnificent Pasteur Institute, founded by Madame Bouisson-Bertrand institutes of biology ophthalmology electro-therapeutics and chemistry the zoological station at Cette of international fame the botanical garden of Mont Aigoual (3 909 ft) for the study of mountain vegetation a laboratory for experimental phonetics provided with the most modern instruments a laboratory for experimental psychology, a geographical institute, a very fine museum of casts (Greek sculpture and French sculpture of the Middle Ages), and a library of upwards of 600 MSS and 200 000 volumes increasing at the rate of more than 7 000 volumes a year

A course for foreign students was organized ten years ago attended (during each session of six months) by about 100 students for twenty-five hours a week and dealing with French history, geography, life, language and literature J V

MONUMENTA GERMANIAE PAEDAGOGICA. —A large and comprehensive history of education in Germany and German-speaking countries planned by Dr Karl Kehrbach and published in periodical volumes since 1886 Forty-eight volumes have been published dealing with every phase of German education from the early Middle Ages The work is planned in four sections treating of school ordinances school text-books works on education and educational systems and general essays on these three sections The school ordinances are dealt with historically and include those of all the most important of the German and Austrian States Five volumes deal with the history of military education and training in German-speaking countries Others treat of the youth and education of famous princes of Brandenburg and the kings of Prussia

MOORISH LEARNING AND CULTURE IN SPAIN, IN THE MIDDLE AGES AND ONWARDS, THE DEVELOPMENT AND INFLUENCE OF — During the Middle Ages Spain was the most civilized nation in Europe She was the channel through which the scientific and artistic influences and chiefly the theological and philosophical sciences penetrated into Europe and produced the first Renaissance the true forerunner of the great classic Renaissance of the fifteenth century

The Moors of the East the heirs of Greek science came into contact with the inhabitants of the North of Spain during the struggle they embarked in for the conquest of the Iberian peninsula When two races come into contact even through the medium of war the more civilized race will exercise the preponderating influence over the less civilized an influence which is manifested by instinctive imitation of its perfections This historical phenomenon was again repeated when the simple-minded Spaniards came in contact with the pomp and luxury of the Courts of Abderrahman III Alhaquen II and Hixem II during the days of the Christian kings of Seville Saragossa, and Toledo

The imitation by Europe of many characteristics of the Eastern Moors was a direct consequence of what the Spaniards learned from the Arabs who settled in Spain Hence arises the interest which a study of the influence of Arab civilization in Spain during the Middle Ages evokes

Limiting our study to manifestations in the intellectual sphere we will dwell on the influence it exercised on philosophy literature medicine the mathematical and astronomical sciences and the arts

Philosophy So far as regards philosophy the Arabs brought into Europe through the medium of Spain the knowledge of the works of the Greek philosophers and of their disciples in the East The study of philosophy, almost unknown or indeed neglected in Europe at that time had already been initiated in mediaeval Spain by the Jews and notably by Avicebron Maimonides and others but the fame and diffusion of the philosophical movement in Spain are due to the Moorish philosophers One of the Neoplatonist systems that of the pseudo-Empedocles introduced into Spain during the ninth century by a Moor of Spanish descent called Abenmasarra of Cordova, whose school was perpetuated in Spain up to the eleventh century, shed its rays as far as the remote confines of Eastern and Western Islam, and exalted the spirit of its founder to the order of the Sufis of

Persia and of India, it still inspires the superstitions of innumerable religious sects in the Empire of Morocco

To this first current of the Greek Renaissance introduced by the Moors and characterized by a mystic Neoplatonism there succeeded another an Aristotelian current, whose representative in the East was Avicenna but it was to Spain through the medium of Averroes and Maimonides that belonged the glory of developing it in a definite manner

Both streams ran a parallel course during a few centuries in Jewish and Moorish Spain until the Toledo translations crossed the Pyrenees and diffused their waters through the fields of Christian Europe

Literature Moorish influence over the Christians was less marked in the sphere of literature (if we except the ballads and apologues) than in the other orders of culture The impress on the language is more noticeable The intimacy and persistency of social relations between both peoples determined the use of the Arabian tongue on the one hand, in the Christian territories of Castile Leon Aragon Navarre etc and on the other hand effected the introduction of many elements of this tongue into the romance languages together with the many mixed words or words of Latin origin (although modified by the influence of Arab writings) which figure in the Spanish tongue The Romance language was in its turn employed by the Spanish Moors, who were ignorant of Arabic and who despised Latin as the liturgical language of the religion they had abandoned The natives of Andalusia first succeeded in creating a literature in the national tongue before the other Latin peoples of Europe a fact which of itself places Spain at the head of the literary Renaissance of Europe in the Middle Ages

The Moors also cultivated history and more especially biography although in the literary style proper to that period In the kingdoms of Taifas illustrious representatives of that art flourished Aben Hayyan having been the first and the most famous of the Moorish historians of Spain

Medicine and the Sciences The science of medicine practised according to Greek traditions and inspired by the works of Hippocrates and Galen such as they were understood in the East, began to be cultivated in Spain on the initiative of the Cordovan physician Ahmed Benayas who in the time of the Caliph Mohamed studied the scientific principles of therapeutics on the methods introduced by the celebrated Eastern physician Yumus el Harrani into Spain at that period From these Eastern sources the brilliant medical school of Avenzoar and Averroes had its birth in Spain

The sciences of mathematics and astronomy dragged on a languid existence concealed behind the orthodox veil of the Canon Law and of the Liturgy With problematics alone was any compromise made in so far as its calculations were indispensable to the complicated legislation relating to the division of inheritances, with astronomy, in so far as its laws served to fix the computations of the Moorish Calendar and its relation to the ceremonies and precepts of public worship Astronomy, like philosophy was ill-regarded by the people, and the Government went so far as to forbid its study Nevertheless there were famous astronomers among the Spanish Moors such as Ben Bargot and others, and important observations were made from the minarets of the mosques in imitation of those in the East

Architecture and the Arts. The Moors exercised great influence over the Hispano-Romans in architecture Señor Menendezy Pelaygo, estimating the influence of the Moors in philosophy medicine, astronomy and the arts and industries of Spain, says, when dealing with architecture, in his *Critical Studies* that the Spaniards received from the Moors the only peculiarly Spanish style of building they can boast of It is true that the Arabs derived the fundamental elements of their architecture from the Chaldeans and the Assyrians and even some details from the Byzantines but the Moors of Spain introduced a special type which differentiates the Moorish architecture of Spain from all the Eastern styles that preceded it One of the most notable examples of this architecture is the Mosque of Cordova built between the eighth and the tenth centuries

The Moors cultivated the other fine arts—painting and sculpture—indifferently well Music they practised rather more freely and they completed the musical theory of the Greeks by means of a study of the physical bases of sounds They also exercised a permanent influence on popular national airs

The industrial arts reached a higher development The Moors of Spain excelled in the ceramic and gold smith's arts, in the former, by their characteristic enamelled faïence and vases glazed with a metallic lustre, which were made especially in Valencia and Majorca In the art of the goldsmith they were famous for the fabrication of mosque lamps and hafts and sheaths of swords and daggers

The Mozarabes and the renegades contributed greatly to the development of this scientific and artistic excellence and assisted in its diffusion over Christian Spain by bringing to the Moors valuable elements of Visigoth culture and by translating into Arabic many works of philosophy, medicine, agriculture and history from classic and Spanish authors

This progressive assimilation by the Spanish people of Oriental culture did not sever the continuity of Iberian thought It is not too much to say that the Spanish peoples of those remote times were the faithful and almost the sole bearers of culture into mediaeval Europe C R G

MORAL INSTRUCTION, HOW TO GIVE.—All effective moral instruction presupposes in the learner some moral experience and an interest in reflecting on it Moral education in the primary sense, provides opportunity for this experience and fosters its development The social impulses and feelings, the instinct of obedience to obvious authority, the infant sentiment of personal honour are all involved in it And presently the reflective stage of moral experience is reached, with the awakening of consciousness to the sense of duty This awakening should not be forced unduly, nor allowed to delay too much It should be free, but expected in due course and prepared for accordingly

The prime educational means to this end is to lay upon the child *obligations* of service and self-restriction—of efforts and abstinences—which are within his power, and to which he is required to respond Side by side with these, there should be other claims, not made obligatory, which he is at first encouraged, and afterwards left, to take up freely The child thus trained learns instinctively to serve his little community and restrain aggressive

self-assertion (1) because he must, and (2) because certain dispositions in him which we call virtuous, prompt him to be honourable, kind faithful, and courteous in all his dealings

One part of moral education consists in cultiva tion by frequent practice of these latent virtuous dispositions Opportunities should be liberally supplied The educator also needs to be on his guard against condoning the slip-shod ways of the so called "well meaning child' who would like to be good, but takes his own way nevertheless staving off conscience and criticism by plausible excuses One must be critical as well as sym pathetic in the training of the young more especially in relation to the intellectual virtues of justice and truth

Behind virtuous disposition in general lies the humane social nature, education of which depends less on the requirement of particular qualities than upon the atmosphere of mutual service and sociability which pervades the social group and draws out response in every member Consideration for others inspires effort and defines conduct in such a home or school the selfish and thoughtless feel themselves exceptional and are easily made ashamed In like manner mutual respect appears in all social converse courtesy marks interchange of ideas on both sides as between parent and child senior and junior, and equals of every degree Sociability—a real intellectual commerce—plays a large part in training the social sense

Thus while the child is trained to dutiful obedience as an obligation, his social nature also develops on such lines that he easily passes in course of time out of the sphere of obligation into that of freedom, in respect of the claims for which obedience is required In a thoroughly socialized nature "I must" for the most part becomes "I will In others of more restricted generosity it becomes 'I ought In either case the response is free of external compulsion the thing is done with a conscious—or sub conscious—mental reference such as that "everyone ought to do it or that it is 'my business" in the particular scheme of things "It is only my duty' says the modest soldier hero "hundreds of fellows would do the same if they got the chance'

School Talks and Addresses With sufficient moral experience as background the young mind is easily interested in short talks on conduct and character Such talks occur naturally with indi viduals as arising out of their faults and neglected opportunities But similar talks may well be given in class or school assembly the teacher using his experiences of right and wrong as text Thus con viction is brought home at long range to offenders who are left to apply the lesson and make the appropriate act of penitence themselves

A series of addresses on such occasional topics may be so devised as to result in the growth of systematic moral ideals in the hearers minds since in ethical analysis every virtue is seen to depend on a few great principles All roads lead back to the twin ideals of noble character on the one hand and of harmonious corporate life on the other Nor should discourses on the topics of modern social and political life be neglected Young people should be in touch with the movements of history in their own time and take an interest in the civic prospect ahead of them

To this end provision should at some stage be made for courses of study on government and citizenship Reforms also might be undertaken in the History syllabus with a view to a wider outlook on the movements of the world In any case aid must be claimed from teachers of History and foreign languages for the development of international breadth in the humanist interest

Opportunities for direct moral teaching occur more particularly in the English Literature lessons teachers of this subject ought not to be deficient in ethical interest and scholarship The important thing to realize in all these incidental teachings is that the social sense the duty sense the sense of honour and personal rectitude should develop together as one whole by the double process of practice and intelligent reflection The heroic tales of primitive literature furnish excellent material for such development

Morals and Religion. Throughout we may assume —though the argument above does not assume it —that the moral teaching is supported and reinforced by the religious instruction Most of the direct moral teaching in our schools is in fact, based on religion Apart from this as will be indicated presently moral development in times of stress leads up naturally to religious faith as its essential crowning need The children who grow in religious faith early are all the better prepared

The religious sanction simply expressed makes easy appeal to most little ones They are naturally moved by the thought of God ruling us all as a loving Father requiring of each one that he should be fair and kind to others—never disobliging always obedient to the good parents God has given him—ruling us too as Almighty God whose will is done whether we work loyally with Him or not. But, if not we bring about our own punishment—by dropping out of His family circle in which the faithful children serve and love In some such form adequately developed the parable of God s family led by the one perfect Son is taught to the little ones Later the parable of the Kingdom makes strong appeal In obedience to the promptings of God s Spirit in our conscience and reason we work with Him to bring about His Kingdom—the commonwealth of nations—by doing His will on earth by living together in righteousness and friendship and mutual service And as Head of the Kingdom there is the eternal Christ the representative of God to men as Son of God and of men to God as Son of Man Attempts at adequate explanation of these great ideas should not be hastened let the child ponder for himself and ask his own questions Meanwhile he can be helped to realize that we by our existence in this world as spiritually the children of God are called upon, each of us to "do his bit towards making it what God means us to make it—a community of persons working together in justice friendship, and truth

The reasoned treatment of great central truths has its proper place in the Senior School Course, where the systematic study of the Life of Christ might well be followed by a further systematic study of His Teaching on Life and Conduct

A Course of Humanistic Study If this senior course on Christian Ethics can be preceded or followed by a systematic course on the lines of general humanistic study—either literary or logical, or both—so much the better Every young person ought to have his attention moved in this direction. There are cases where religious teaching, for the time at least, fails in practical effect, and there

are those who are withdrawn from religious instruction. Even apart from these, moral instruction on the lines of appeal to personal self-respect, humanist goodwill, sympathy, and reason, is necessary for all who are more brainy than spiritually minded

A practical treatment of scientific ethics up to date, after the Aristotelian manner, is one good variant A study of the Moral Ideal as it reveals itself in Literature is another There is much to learn from study of heroic ideals—Greek and Roman, Teuton and Celt—as well as from the later tales of mediaeval chivalry, in many of which it is easy to trace the great hearted Pagan hero transformed into the perfect Christian knight It is essential, however, that this attractive study of noble human personality should be supplemented by plain effective meditation on the problems of social duty as they show themselves to day—on the industrial civic and spiritual responsibilities which the true man has to bear—and in bearing which he learns faith in an overruling Power for good that works with him and will prevail

S Bryant

MORAL INSANITY. — (See Insanity in Children)

MORALS AND MANNERS, HISTORY OF THE TEACHING OF —Religion in all ages has had intimate association with the promotion and preservation of morality and religious institutions have always undertaken the continuation of the novel traditions of the prevalent orthodoxy of morals as well as of dogmas In earlier ages of the cloister, morality was taught by precept by regulations and by the atmosphere involving principles of theocracy mysticism or ecclesiasticism Outside the cloister, the *scholae domesticae* of the bishops preserved the Church manners and morals as a part of household government and the same type of training spread into the mediaeval palaces and castles Thus in the fourteenth century, we find the typical instance in the pietist household education of the castle of Elzear Count of Sabran and of his wife Countess Delphina. (See Household Education) Dr Furnivall drew attention to the broader type of chivalric baronial education in the *Babees Book* (Early English Text Society) and reprinted Hugh Rhodes's *Boke of Nurture* John Russell's *Boke of Nurture* and Richard West's *School of Virtue* Some of the shorter treatises are significant Thus the group of the *Stans puer ad Mensam* (including that of John Lidgate of *c* A D 1460 and the still earlier, *c* 1430, A B C of Aristotle) point to the mediaeval tradition of teaching manners and morals as traceable to Latin and Greek origins, reinforced and modified by the mediaeval Catholic Church

Training in the Houses of the Great. Yet in mediaeval times there are two distinct currents, though they are often united that of the Church ecclesiastics, and that of the standards of manners and morals of the courtier and of the knight The place of correct formal conduct in the man of high degree, and the necessary training to achieve it, is fully illustrated in Chaucer's *Canterbury Tales* Chaucer's knight loved chivalry, truth and honour freedom and courtesy, never spoke any "villainy" His son, the young squire, was courteous, lowly, and serviceable, and "carf by forn his fader at the table" In courtesy the prioress placed all her pleasure, and her manners were scrupulously trained

The provision for the training of children in the household of the great had educational effects, not always recognized by historians, as, for instance, the connection of the king's royal household of children with the University of Cambridge In 1317, Edward II founded King's Hall in the University of Cambridge, and sent the children in the royal household to the Hall thus established The office of warden at the King's Hall and the appointment to scholarships were reserved to the King King's Hall was merged by King Henry VIII into his new foundation of Trinity College Up to Queen Elizabeth's time, children continued to be received at Court for training under a teacher known as the Master of the Henxmen The master's duties were defined "to shew the schools of urbanity and nurture of England, to learn them to ride cleanly and surely to draw them also to jousts, to learn them 'were theyn harneys', to have all courtesy in words, deeds, and degrees, diligently to keep them in rules of goings and sittings after they be of honour This Master sitteth in the hall, next unto these henxmen at the same board, to have his respect unto their demeanings, how mannerly they eat and drink, and to their communication and other forms curial after the book of urbanity" (*Liber Niger* in Household Ordinances, p 45 quoted by Dr Furnivall *Babees Book* Introd, p ii)

These practices of English mediaeval training have much in common with household training in France Spain possessed its *El Libro del Infante* a collection of religious and moral precepts collected by the Prince Don Juan Manuel in the fourteenth century Mr W M Rossetti edited (1869) for the Early English Text Society an Italian series of Books of Courtesy Italy is, *par excellence*, the country which in its ducal Courts combined the ideas of training in courtesy and in literature, and in arms This practical educational direction found its highest literary development in Baldassare Castiglione's *Libro del Coriegiano* in 1528 (See Castiglione) But, if Castiglione is the greatest Italian exponent of manners the Italian Petrus Paulus Vergerius deserves to be equally well known by educational students for his earlier treatise on moral training his *de Ingenuis Moribus* (*c* 1392) 'the most widely read of all the productions of the Revival of Letters," as Mr W H Woodward has ventured to call it

The Influence of the Mediaeval School. What Vergerius described as desirable was practically carried out in the school of his contemporary, Vittorino da Feltre

In the Renaissance movement, represented by Vergerius and Vittorino in the earlier stage (the great educational influences of roughly the fifteenth century) and by Erasmus and Vives (in the first half of the sixteenth century), we find the marked emphasis on the teaching of manners and morals, in both the broad and the narrow sense of the term (*i e* on character development as the main end of education and in formal training in manners and morals)

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self-assertion (1) because he must, and (2) because certain dispositions in him, which we call virtuous, prompt him to be honourable, kind, faithful, and courteous in all his dealings

One part of moral education consists in cultivation, by frequent practice of these latent virtuous dispositions Opportunities should be liberally supplied The educator also needs to be on his guard against condoning the slip-shod ways of the so-called "well meaning child," who would like to be good, but takes his own way nevertheless staving off conscience and criticism by plausible excuses One must be critical as well as sympathetic in the training of the young more especially in relation to the intellectual virtues of justice and truth

Behind virtuous disposition in general lies the humane social nature education of which depends less on the requirement of particular qualities than upon the atmosphere of mutual service and sociability which pervades the social group and draws out response in every member Consideration for others inspires effort and defines conduct in such a home or school the selfish and thoughtless feel themselves exceptional and are easily made ashamed In like manner, mutual respect appears in all social converse courtesy marks interchange of ideas on both sides as between parent and child senior and junior and equals of every degree Sociability—a real intellectual commerce—plays a large part in training the social sense

Thus while the child is trained to dutiful obedience as an obligation his social nature also develops on such lines that he easily passes in course of time out of the sphere of obligation into that of freedom in respect of the claims for which obedience is required In a thoroughly socialized nature "I must" for the most part becomes "I will" In others of more restricted generosity it becomes "I ought" In either case the response is free of external compulsion the thing is done with a conscious—or sub-conscious—mental reference such as that "everyone ought to do it" or that it is "my business" in the particular scheme of things 'It is only my duty' says the modest soldier hero, "hundreds of fellows would do the same if they got the chance'

School Talks and Addresses With sufficient moral experience as background the young mind is easily interested in short talks on conduct and character Such talks occur naturally with individuals as arising out of their faults and neglected opportunities But similar talks may well be given in class or school assembly the teacher using his experiences of right and wrong as text Thus conviction is brought home at long range to offenders who are left to apply the lesson and make the appropriate act of penitence themselves

A series of addresses on such occasional topics may be so devised as to result in the growth of systematic moral ideals in the hearers minds since in ethical analysis every virtue is seen to depend on a few great principles All roads lead back to the twin ideals of noble character on the one hand and of harmonious corporate life on the other Nor should discourses on the topics of modern social and political life be neglected Young people should be in touch with the movements of history in their own time and take an interest in the civic prospect ahead of them

To this end, provision should at some stage be made for courses of study on government and citizenship Reforms also might be undertaken in the History syllabus with a view to a wider outlook on the movements of the world In any case, aid must be claimed from teachers of History and foreign languages for the development of international breadth in the humanist interest

Opportunities for direct moral teaching occur more particularly in the English Literature lessons teachers of this subject ought not to be deficient in ethical interest and scholarship The important thing to realize in all these incidental teachings is that the social sense, the duty sense, the sense of honour and personal rectitude should develop together as one whole by the double process of practice and intelligent reflection The heroic tales of primitive literature furnish excellent material for such development

Morals and Religion Throughout we may assume —though the argument above does not assume it —that the moral teaching is supported and reinforced by the religious instruction Most of the direct moral teaching in our schools is in fact based on religion Apart from this, as will be indicated presently moral development in times of stress leads up naturally to religious faith as its essential crowning need The children who grow in religious faith early are all the better prepared

The religious sanction simply expressed makes easy appeal to most little ones They are naturally moved by the thought of God ruling us all as a loving Father requiring of each one that he should be fair and kind to others—never disobliging always obedient to the good parents God has given him—ruling us too as Almighty God whose will is done whether we work loyally with Him or not. But, if not we bring about our own punishment—by dropping out of His family circle in which the faithful children serve and love In some such form adequately developed the parable of God s family led by the one perfect Son is taught to the little ones Later the parable of the Kingdom makes strong appeal In obedience to the promptings of God's Spirit in our conscience and reason, we work with Him to bring about His Kingdom—the commonwealth of nations—by doing His will on earth by living together in righteousness and friendship and mutual service And as Head of the Kingdom there is the eternal Christ the representative of God to men as Son of God and of men to God as Son of Man Attempts at adequate explanation of these great ideas should not be hastened let the child ponder for himself and ask his own questions Meanwhile he can be helped to realize that we, by our existence in this world as spiritually the children of God, are called upon, each of us to 'do his bit' towards making it what God means us to make it—a community of persons working together in justice friendship and truth

The reasoned treatment of great central truths has its proper place in the Senior School Course where the systematic study of the Life of Christ might well be followed by a further systematic study of His Teaching on Life and Conduct

A Course of Humanistic Study. If this senior course on Christian Ethics can be preceded or followed by a systematic course on the lines of general humanistic study—either literary or logical, or both—so much the better Every young person ought to have his attention moved in this direction There are cases where religious teaching, for the time at least, fails in practical effect, and there

are those who are withdrawn from religious instruction. Even apart from these, moral instruction on the lines of appeal to personal self-respect, humanist goodwill sympathy, and reason, is necessary for all who are more brainy than spiritually minded

A practical treatment of scientific ethics up to date, after the Aristotelian manner, is one good variant A study of the Moral Ideal as it reveals itself in Literature is another There is much to learn from study of heroic ideals—Greek and Roman, Teuton and Celt—as well as from the later tales of mediaeval chivalry, in many of which it is easy to trace the great hearted Pagan hero transformed into the perfect Christian knight It is essential, however, that this attractive study of noble human personality should be supplemented by plain effective meditation on the problems of social duty as they show themselves to day—on the industrial, civic and spiritual responsibilities which the true man has to bear—and in bearing which he learns faith in an overruling Power for good that works with him and will prevail

S Bryant

MORAL INSANITY. — (See Insanity in Children)

MORALS AND MANNERS, HISTORY OF THE TEACHING OF.—Religion in all ages has had intimate association with the promotion and preservation of morality and religious institutions have always undertaken the continuation of the novel traditions of the prevalent orthodoxy of morals as well as of dogmas In earlier ages of the cloister morality was taught by precept, by regulations and by the atmosphere involving principles of theocracy mysticism or ecclesiasticism Outside the cloister, the *scholae domesticae* of the bishops preserved the Church manners and morals as a part of household government and the same type of training spread into the mediaeval palaces and castles Thus in the fourteenth century we find the typical instance in the pietist household education of the castle of Elzear Count of Sabran and of his wife Countess Delphina (See Household Education) Dr Furnivall drew attention to the broader type of chivalric baronial education in the *Babees Book* (Early English Text Society) and reprinted Hugh Rhodes's *Boke of Nurture* John Russell's *Boke of Nurture* and Richard West's *School of Virtue* Some of the shorter treatises are significant Thus the group of the *Stans puer ad Mensam* (including that of John Lidgate of *c* A D 1460 and the still earlier *c* 1430, A B C of Aristotle) point to the mediaeval tradition of teaching manners and morals as traceable to Latin and Greek origins reinforced and modified by the mediaeval Catholic Church

Training in the Houses of the Great. Yet in mediaeval times there are two distinct currents though they are often united that of the Church ecclesiastics, and that of the standards of manners and morals of the courtier and of the knight The place of correct formal conduct in the man of high degree, and the necessary training to achieve it, is fully illustrated in Chaucer's *Canterbury Tales* Chaucer's knight loved chivalry, truth and honour, freedom and courtesy, never spoke any "villainy" His son, the young squire, was courteous lowly, and serviceable, and "carf by forn his fader at the table" In courtesy the prioress placed all her pleasure, and her manners were scrupulously trained

The provision for the training of children in the household of the great had educational effects, not always recognized by historians, as, for instance, the connection of the king's royal household of children with the University of Cambridge In 1317, Edward II founded King's Hall in the University of Cambridge and sent the children in the royal household to the Hall thus established The office of warden at the King's Hall and the appointment to scholarships were reserved to the King King's Hall was merged by King Henry VIII into his new foundation of Trinity College Up to Queen Elizabeth s time children continued to be received at Court for training under a teacher known as the Master of the Henxmen The master's duties were defined "to shew the schools of urbanity and nurture of England, to learn them to ride cleanly and surely, to draw them also to jousts, to learn them 'were theyn harneys', to have all courtesy in words deeds, and degrees, diligently to keep them in rules of goings and sittings after they be of honour This Master sitteth in the hall, next unto these henxmen, at the same board, to have his respect unto their demeanings, how mannerly they eat and drink and to their communication and other forms curial after the book of urbanity' (*Liber Niger* in Household Ordinances, p 45 quoted by Dr Furnivall, *Babees Book* Introd , p ii)

These practices of English mediaeval training have much in common with household training in France Spain possessed its *El Libro del Infante* a collection of religious and moral precepts collected by the Prince Don Juan Manuel in the fourteenth century Mr W M Rossetti edited (1869) for the Early English Text Society an Italian series of Books of Courtesy Italy is, *par excellence*, the country which in its ducal Courts combined the ideas of training in courtesy and in literature, and in arms This practical educational direction found its highest literary development in Baldassare Castiglione's *Libro del Cortegiano* in 1528 (See Castiglione) But, if Castiglione is the greatest Italian exponent of manners, the Italian Petrus Paulus Vergerius deserves to be equally well known by educational students for his earlier treatise on moral training, his *de Ingenuis Moribus* (*c* 1392), "the most widely read of all the productions of the Revival of Letters," as Mr W H Woodward has ventured to call it

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authors led to a very large output of text-books based on instruction by precepts *sententiae* proverbs, and maxims selected from the classics mainly but often interspersed with illustrations from other sources Perhaps the most interesting example of this type of school text book is that of Erasmus—the *Civilitas morum puerilium* in 1526 The main sources of Erasmus s book are sayings of Solon and Pythagoras Theognis Phocylides Cicero s *de Officiis* and Plutarch on *Education* together with sayings from the " School of Salerno and the distichs of the stoic Dionysius Cato The book contains chapters on " Physical Training and Personal Carriage ", on " Dress ", on " Behaviour in Church, at Table, in Company at Play and in the Dormitory " Two years earlier Juan Luis Vives (*q v*) published at Louvain his *Introductio ad Sapientiam* a collection of moral precepts for the young scholar The *Satellitium* of Vives (also issued in 1524) contained nearly 200 symbolical maxims suitable for the young princess Mary daughter of Henry VIII and Catharine of Aragon In tracing the history of girls education it is mainly through the books on Manners and Morals that we can trace the mediaeval development The literature is more comprehensive than has ordinarily been supposed Miss Alice A Hentsch has carefully described 114 of these treatises on the education of women in a monograph entitled *De la Littérature didactique de moyen âge s addressant spécialement aux femmes* (Cahors 1903)

Aesop's Fables The Renaissance developed the text books on manners and morals from the classical moralists but in addition the scholars brought to light the old Greek fables of Aesop (*q v*) which from the *editio princeps* of their printing (*c* 1478) onwards, became the leading general text book of moral fables Caxton published an English translation from the French in 1484 Other well-known English editions were that of William Bulloker ' in true ortography in 1585, the illustrated edition of John Ogilby in 1665 Charles Hoole s edition in 1657 that of Sir Roger L'Estrange in 1699 and the very interesting edition by the philosopher educationist, John Locke (*q v*) in 1723

Influences of the Sixteenth and Seventeenth Centuries Whilst Aesop held his ground as an early text book for learning Latin and Greek the books on manners and morals intended for children changed their complexion according to the great religious philosophical and social currents of each generation The Puritan revolution centred their text books on the Scripture-stories (*e g* Castellio [*q v*] *Dialogues sacrés*) and the manners and morals which reflected the theocratic atmosphere of Continental Protestantism (*e g* Corderius s [*q v*] dialogues) These types entirely displaced for adults as well as boys and girls the old forms of mediaeval romances Parallel to the Puritan text books of manners and morals the Catholics were provided with a manual by the Jesuit College of La Flèche (in 1595) translated into English by Francis Hawkins in 1640, under the title of *Youth s Behaviour*

When the period of the Restoration brought about the adoption of French manners and morals at the Court a reaction set in fully described in Josiah Woodward's *Rise and Progress of the Religious Societies and of the Endeavours for Reformation of Manners* (2nd ed 1698) The text-book of the charity schools Talbot's *Christian Schoolmaster* lays down the rules of behaviour and conduct for teachers to develop in the numerous schools established Whilst Talbot's book especially influenced Church schools, Dr Isaac Watts reached all classes of the community in his *Divine and Moral Songs* in ' easy language ' in verse in 1715

Influences in the Eighteenth and Nineteenth Centuries In the eighteenth century educational writers of the more philosophical type passed out of the ages of the Renaissance and of early Puritanism into the current of the age of enlightenment, and the attempt was made to produce books which combined the " rational ' and the " moral " The typical example of the later part of the eighteenth century child s book is Thomas Day s *Sandford and Merton* (1783–1787) followed by Miss Edgeworth s *Moral Tales* in six volumes in 1801 Books inculcating manners and morals became simpler and more homely but continued in the writings of Hannah More and Sarah Trimmer to be essentially didactic In the same period the rise of the Sunday schools (*q v*) took place and produced a literature of their own in manners and morals

The nineteenth century brought psychology to its own in novels for adults and the old stories of manners and morals have receded into the back ground Fairy tales folk lore and animal stories have come to the front Boys books have become new classics in history in school stories in romance and adventures and boys authors such as Jules Verne Kingston and Ballantyne are balanced by girls authors Mrs Ewing and Miss Yonge whilst R L Stevenson Lewis Carroll and Rudyard Kipling attract readers of all age because they combine literary simplicity with subjects of common primary interest to all With the falling off of the didactic moral story for teaching purposes, a movement has set in for direct moral instruction

F W

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MORAVIAN SCHOOLS —Moravian schools were the direct outcome of the intense religious life fostered by the Moravians To this extent and to this extent alone were they denominational In no case was a school started as the result of corporate action on the part of the Church All the schools were the result of local effort The object in each case was the religious training of the children of those who had become attached to their body The first effort was made in the heart of the Metropolis in Little Wild Street when on 3rd July 1741 ' William Otley began to keep school with little James Viney Other pupils soon came in and this little school—after various removals to Broad Oak in Essex Buthmere in Wiltshire Smith House at Wyke—became finally established at Fulneck near Leeds as a boys and a girls' school In 1782 school work was formally recognized by a resolution of Synod as an integral part of the Church s work Educational effort now became widespread and before the nineteenth century was very old there were established besides the schools at Fulneck, a boys' and a girls' school at Fairfield near Manchester, a boys' and a girls' school at Ochbrook, near Derby a boys' and a girls' school at Gracehill, near Ballymena in Ireland a boys' school at Wellhouse Mirfield, and

girls' schools at Dukinfield, Bedford, Gomersal (near Leeds), Wyke and Tytherton (near Chippenham) The educational activity of the Moravians now extended far beyond the children of their own members Yet though thousands of children belonging to other denominations had passed through these schools it would be difficult to find a single case of a pupil becoming a Moravian by reason of his education at a Moravian school Most of these schools have a century's work to their credit all of them continued for the greater part of a century Considering the smallness of the Moravian body, and the very inadequate accommodation provided in many cases they obtained a remarkable reputation The Gracehill schools at one time may almost be said to have occupied a position in Ireland comparable to that of the great public schools in England

The Period of Prosperity. Several reasons may be adduced to explain their extraordinary success In the first place the schools were mostly staffed by teachers who practically gave their labour or at any rate received hardly any remuneration Job Bradley was teaching small boys at Fulneck for forty five years and probably never received more than a few shillings a week besides his board and lodging They were therefore able to offer a sound education at a very low cost when good schools were rare and expensive But the chief attraction was no doubt their distinctive religious teaching This was carried to absurd lengths as when we read of children of 6 being instructed in the nature of the resurrection body and when the ravages of smallpox were regarded as rich harvests for the Saviour Yet these quaint examples are as much a test of the genuineness of their faith as of the advance of our science With this of course, there went a strict discipline and the thoroughgoing supervision of all the child s doings which was carried out in Moravian schools had much to do with the general confidence which they aroused This close connection between teacher and child led to a "fatherly' and motherly relation, which has now become common in schools for smaller children but was a rarity when Moravian schools were started

A Time of Decline Thirty years saw the founding of nearly all Moravian schools and the last thirty years has seen the closing of all except the two schools at Fulneck, and the girls schools at Och brook Tytherton, and Fairfield It may seem strange that schools which held their ground for so long, and were, in their day, so successful should not have become a permanency Yet, in the circumstances their closure was inevitable

In all their long history they never received a penny of endowment from any pious benefactor Their pupils passed out of the schools into their own denominations and the schools neither asked nor received any help from them The number of members of the Moravian Church who were financially able to educate their children at a boarding-school has always been small and a school without a denomination to back it up is like a business without capital Other denominations began to build schools, and their wealth has enabled them far to surpass the efforts put forward by schools which could exist only on the modest fees which they demanded The advent of State education and rate-aid has of course greatly accelerated the decline of Moravian schools The schools at Fulneck have been rendered more stable by the fact that ministers' children are educated there, and for this there is a not inconsiderable endowment The girls' school at Fairfield has now been taken over by the local authorities Thus, while the Moravian teacher of to-day has reason to be proud of the educational work which the spiritual successors of Comenius were able to do in this country, he is able, better than most, to appreciate the pathos of the Virgilian line—

"Fuimus Troes et ingens gloria Troiae"

E WALDER

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MORE, HANNAH (1745–1833) —Born at Stapleton near Bristol was the daughter of a poor schoolmaster who had charge of a small charity school She was the cleverest of five sisters, of whom the eldest Mary became at the age of 21 the head of a school in Bristol All the girls lived together at the school and Hannah at the age of 17 began her literary career with a play, 'The Search after Happiness' which was acted by the pupils The success of this and subsequent plays attracted attention and led to associations with Dr Johnson (*q v*) and members of his famous club Hannah More went to London about 1772 or 1773 and, after three years intercourse with the literary leaders of the day, she retired to her cottage "Cowslip Green" in a village near Bristol Serious religious thoughts took possession of her and she devoted her attention to philanthropic and benevolent work among the mining and labouring population of neglected villages in the Mendip Hills establishing schools for the poor and providing instruction for parents on Sundays The need of literature for the poor led her to write a number of tracts known as "Cheap Repository Tracts" which were at first distributed by hawkers and stall-keepers The first was *The Shepherd of Salisbury Plain* a portrait from the life we are told of a model of courtesy who had eight children and six shillings a week to keep them on In 1799 she wrote *Strictures on Female Education* full of sensible suggestions advocating more careful training in moderation of language, filial obedience and 'sensibility' As a literary woman, Hannah More is best known through her novel *Coelebs in Search of a Wife* a religious tale or novel for the upper classes in which appear many sketches of society and character (See also "BLUESTOCKINGS" AND EDUCATION, THE)

MORE, SIR THOMAS (*b* 1478) —Executed 1535 on a charge of high treason connected with the assumption of the Royal Supremacy in a novel form by Henry VIII, was, as writer, scholar, Lord Chancellor, in the forefront of the great educational movement at the beginning of the sixteenth century in England He was the intimate friend of Colet, Linacre, Erasmus—men who were instrumental in encouraging the study of Greek at Oxford In 1518 he addressed the "fathers and proctors" of that University on behalf of the study of the classics, and especially of Greek, as a necessary foundation for that of theology, and appealed to the examples of Archbishop Warham, Wolsey, and the King himself in favour of it His education of his own children was famous his daughters as well as his son were taught to compose in Greek and Latin,

and to write and converse on all the intellectual subjects of the day He employed famous masters for his children, and his scheme of education is preserved in one of his letters (Stapleton *Tres Thomae*, Chap X p 253) To his children succeeded his grandchildren of whom he had at one time eleven taught under his roof and his letters and those of Erasmus show how keenly interested he was in every problem—secular as well as religious —in the education of his day A special interest attaches to those passages of his *Utopia*, in which he sketched what may perhaps be regarded as his ideal of education He regarded technical education, craftsmanship as an essential part of what everyone should learn in addition to husbandry and physical exercises Everyone should be obliged to learn one craft and if he desired to learn another also should be permitted Lectures were given daily early in the morning, for those who chose to continue their studies after they had begun to work and those who showed special aptitude were allowed to devote themselves to a life of learning Music logic (but without the precise rules of the pedants of More s day) arithmetic and geometry were essential parts of education, and to these were added astronomy with philosophy (natural and moral) The Utopians took readily to the study of Greek and studied the poets as well as the philosophers and historians These literary studies More regarded as a most valuable foundation for practical work He declares that the wits of the Utopians thus "inured and exercised in learning" became "marvellous quick' in making discoveries" to the advantage and wealth of the age ' No one of his time so perfectly combined an enthusiastic welcome to the New Learning with loyalty to the teaching—classical and Christian—of the past

More was himself a skilful writer of Latin and English verse, and devoted throughout his life to the "humane letters He had engrafted on his own Oxford education the sympathies of the Italian and German humanists but he remained firm in his attachment to the Christian revelation and the Church

More's complete works—English and Latin—have never been reprinted since the sixteenth century They are the original authority for his opinions but many illustrations of them are to be found in the *Letters* of Erasmus (*q v*)

W H H

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MORÉRI, LOUIS—(See ENCYCLOPAEDIA THE EVOLUTION OF THE)

MORPHOLOGY.—(See BOTANY THE TEACHING OF)

MORRIS DANCING.—(See SWORD MORRIS AND COUNTRY DANCES)

MORRIS, WILLIAM—(See ART EDUCATION AND INDUSTRY)

MORSE CODE, THE.—Samuel Finley Breese Morse (1791–1872) an American painter and physicist was born at Charlestown, Mass He was educated at Yale and studied painting at the Royal Academy schools in London Always interested in natural and physical science, he invented an electric transmitter and receiver for telegraphic purposes, and a system of signals to denote letters, numerals, and other speech-signs

His method of representing the elements of language by signals distinguishable at distances beyond the range of the human voice has been adopted by all civilized nations. There are now two principal systems in general use the "European or Continental Code' and the "American Code" The signs employed are based upon short and long sounds called respectively "dots" and "dashes" and used singly or in combination The system can be applied to visual signalling by the motion of an object which appears and disappears for short and long periods of time representing dots and dashes respectively as in the flash of a lamp searchlight, or heliograph Short and long blasts on a whistle, siren or fog horn a high and a low note on other instruments the left and right deflections of a needle or pointer small and large arcs described by the waving of a flag, short and long silences between the clicks of a sounder—all these can be used to signal the two elements of the code

The dots dashes and intervals between them bear the following relations to one another, whatever the speed of transmission may be—

A *dot* is the unit

A *dash* = three dots

The interval between two elements in a *letter* = 1 dot

The interval between two letters in a *word* = 1 dash

The interval between two words in a *sentence* = 2 dashes

The Morse Symbols The alphabetical signs each consist of 1 2 3 or 4 elements Those letters which occur most often in ordinary English have the shortest symbols Thus *E* and *T* are indicated by one dot and one dash respectively while *J Q* and *Z* each contain three dashes and one dot (13 units) Figures are symbolized by five elements

The Morse Alphabet

a	—			*f*		—		*k*	—	—				
b	—			*g*	—	—		*l*		—				
c	—	—		*h*				*m*	—	—				
d	—			*i*				*n*	—					
e				*j*	—	—	—	*o*	—	—	—			
	p	—	—		*u*		—							
	q	—	—	—	*v*		—							
	r		—		*w*		—	—						
	s				*x*	—		—						
	t	—			*y*	—		—	—					
					z	—	—							

Numerals

1	—	—	—	—	6	—			
2		—	—	—	7	—	—		
3			—	—	8	—	—	—	
4				—	9	—	—	—	—
5					0	—	—	—	—	—

Beside these symbols the following are also made use of in the European Morse Code—

ä	*à*	—	—	—					
å	*â*	—	—	—					
					ch	—	—	—	—
é	*è*	*ê*		—					
					ñ	—	—	—	—
ö	—	—	—						
ü		—	—						

Punctuation marks are indicated thus—

( )					( )	—	—	—	
( )	—	—	—		( )	—	—	—	
(?)		—	—		(!)	—	—	—	—

The *call*, the preliminary of every transaction, is given by — — —

The American Code differs considerably from the system we employ Thus, *P* is denoted by five dots, *J* is the European C, *G* is our M, *F* is our R, and so on, while our mark of interrogation is the American full-point

Memorization. Perhaps the best way of learning the symbols is that suggested by Sir Robert Baden-Powell in his *Official Handbook for Girl Guides* (London Pearson, 1918) by which the learner visualizes the dots and dashes as forming letters

Learning letters in pairs where each is the opposite of the other is apt to lead to confusion Thus *A* (—) and *N* (—) are liable to be mistaken one for the other A similar objection, though of lesser degree may be urged against the well-known mnemonic lines beginning—

Every Time —
I Make — —
Signals On — — —
High

A good plan, however is to combine all these methods with the plain straightforward method of committing the symbols to memory in batches of half-a-dozen at a time taking the letters in alphabetical order An excellent exercise then is to mix three alphabets together in any order into groups of 5 letters, obtaining thus 15 five-letter words and 1 three-letter word Such an exercise is called a Naval Test Message and is in common use in testing signallers' proficiency at various rates The test message is taken to be equivalent to an ordinary English message of 20 words, so that, if the given rate is 5 words per minute the time allowed for transmitting the test message will be four minutes

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MOSCOW, THE UNIVERSITY OF. — (See RUSSIAN UNIVERSITIES)

MOSELLANUS, PETER (1493–1524) —He was one of the great humanist teachers of the Renaissance period He was born in a little town on the Moselle—hence his name—and after studying at Cologne, Freiberg, and Leipzig came to England in 1517 He had learnt Greek and had met Erasmus during his course of studies, and at Cambridge he occupied the post of Reader of Greek which had a few years before been held by Erasmus His *Paedologia*, first published in 1517 was very popular and passed through many editions It consists of a series of conversations in Latin, and gives valuable information on student life in the University of Leipzig He was a brilliant scholar, and much was expected of him but sickness and devotion to study led to his early death

MOTHERCRAFT, THE TEACHING OF.—The teaching of mothercraft to elder girls is part of a great development in our educational system, which shows that education has as one of its objects the physical welfare of the individual

The period of decline in infant mortality since 1900 coincides with the rapid progress made in the teaching of mothercraft to the poorer classes It would be illogical to ascribe this coincidence to the operation of a single cause, but the diminished mortality is clearly due to some new influence not in operation before 1900

The inquiry after the Boer War showed that many of the ailments of the soldiers had been caused by the neglect, due to ignorance, of their parents in their rearing

Arising from this report came medical inspection in schools which has revealed the same fact, viz, that many of the troubles of childhood could be prevented if the mother possessed more knowledge of her craft

The numerous schools for mothers which are being set up all over the country are doing excellent work, they are recognized by the Board of Education, and are financed partly by that Authority Here mothers and expectant mothers can receive professional advice from doctors and qualified maternity nurses

Classes are being formed by educational authorities for the study of home hygiene, home nursing, midwifery and infant care

Infant Care in the Schoolroom. The teaching of infant care in girls schools has occupied the attention of mistresses and others for some time, and the reports of the medical officers of the Board of Education show that the subject is regarded by them as vital The various branches of work included under infant care may be classed as (1) ante natal (2) natal (3) post natal To (1) belongs the work of training elder girls—the mothers of the future—in infant care The subject can be easily adapted for the schoolroom It may form the completion of a course of nature study, physiology, or home science and though it is admitted that the ideal instruction in the subject is that given to the girl by her own mother, there is much to be said for the position of the teacher *in loco parentis*

In a report of the Board of Education it is stated "Although it would clearly be of little value to compel unwilling teachers to include this subject in the curriculum it is extremely desirable that no girl should leave school without having passed through such a training and it is satisfactory to note that the interest taken by the teachers—without whose sympathetic co-operation no arrangements can be effective—appears to be steadily increasing and instruction in infant care is becoming more generally regarded as an ordinary part of the school work"

The inspiriting memorandum issued in 1911, by Dr Janet Campbell is another proof of the responsibility which the teacher feels in her position as deputy mother

Many mothers are unable, through home circumstances or personal incapacity, to impart this instruction, others ignore their obligations and fail to fulfil this part of a mother's duty, thus, the duty partly falls on the teachers Moreover, a great many girls have baby brothers and sisters to care for at home, and numbers of those whose mothers have to work during the day away from home are the "little mothers" of the family While their maternal instincts are of the kindest, they often err in the management of Baby through ignorance

Baby or Doll. The question will arise whether a *baby* should be used for teaching purposes, or whether a large washable *doll* is a suitable substitute There will always be an atmosphere of "make-believe" with a doll, but it is easy to handle, and its sublime impassibility presents none of the difficulties experienced in handling a frail little human being

But it is not suggested that the subject of infant care can be dealt with exhaustively at school, school and its influence only "point the way" to future completeness In hospital training schools, a model is always used for practice before the human subject itself is dealt with There would also be some difficulty in obtaining a baby for washing and dressing in a schoolroom The place is unsuitable and there are usually facilities for visiting a neighbouring *crèche* or school for mothers, where teaching may be supplemented by practical work with a baby Besides the benefits derived from the actual instruction—the influence of the school for mothers is felt in later life, and girls are more likely to seek advice there when they have babies of their own

Infant Care in the Curriculum It is necessary that lessons in infant care should be part of a general course in physiology and hygiene and not an isolated subject The teaching should come during the last year of a girls' school life, when she will probably be in the highest class, and to the Infant Care Class should be drafted all girls who will attain the age of exemption during the course Thus each girl when she leaves school will know something about washing weighing dressing and feeding a baby also facts essential to its regular rest, and the proper treatment of young children in emergencies

A good course of mothercraft which has produced gratifying results is the following, which covers three years' teaching In the *First Year* the girls take elementary physiology—the body itself is studied—special reference being made to the organs and their functions and the diseases which 'flesh is heir to' if these organs are not properly cared for The build of the body is studied carefully, and this leads to the *Second Year's work*, when easy bandaging for wounds and first aid for common ailments and accidents are taught Then, during the *Third Year* infant care *only* is taken, and the girls, after receiving lessons on the vital principles of the subject apply their knowledge by demonstrating with a washable doll

The needlework lesson is utilized for the making of the layette and a banana crate furnished by the girls' own efforts serves as a very useful cradle A strawberry basket, prettily trimmed, makes a baby's basket Thus, in a simple practical way, the girls are taught economy

If mothercraft is to be taught successfully, the atmosphere of the school and the influence of the teacher must be such, that the subject is not only interesting, but earnest and dignified In the hands of a weak, unsuitable teacher it might soon develop into a farce and harm instead of good, would result

Much of the future life of a girl depends on the guidance she gets during the impressionable period of adolescence and it is at this time, above all, that the teacher should secure her trust and confidence

The power to influence is not possessed by all, but on the staff of every girls' school there will be found mistresses specially suited for this instruction just as others are better able to specialize in other branches of the curriculum

The lessons are very popular among the girls They take an intelligent delight in them, and it has been found that parents share their daughters' interest and give the teacher loyal and earnest support in her work Many years may pass between school and motherhood, yet the knowledge gained at this impressionable age will stand girls in good stead when the need for its application arises

K T

MOVABLE "DOH" METHODS.—(See TONIC SOF-FA SYSTEM, THE)

MULCASTER, RICHARD (*c* 1530–31–1611)—A great Elizabethan educationist and schoolmaster, who came of an important Cumberland family He was educated at Eton under the redoubtable Nicholas Udall In 1548 he went as King's scholar to King's College Cambridge but in 1555 he was chosen as student of Christ Church Oxford In 1557 he became M A He was highly spoken of for his knowledge in Greek and Oriental languages particularly Hebrew In 1561 he was appointed head master at the newly-founded school of the Company of Merchant Taylors at Lawrence Pountney Hill a post he retained till 1586 From 1586 to 1596 Mulcaster is said to have been sur master of St Paul's School but as Quick points out, it is hardly likely that the head master of Merchant Taylors School for twenty five years would take a subordinate post However from 1596–1608 he seems to have been High Master of St Paul's He was for some time rector of Stanford Rivers in Essex (1598) a post to which he was appointed by Queen Elizabeth A writer in the *Gentleman's Magazine* 1800 (Vol LXX Part 1 p 421) gives the epitaph to Mulcaster's wife who died in 1699 (they were married fifty years) "A grave woman, a loving wife a careful nurse a godly creature a saint in heaven" In *Notes and Queries* (2nd Series Vol VIII p 219) there are stated the names of his children Silvan, Peter Katharine Mulcaster died in 1611

Mulcaster as a Schoolmaster Mulcaster as a schoolmaster is described by Thomas Fuller "In a morning he would exactly and plainly construe and parse the lessons to his scholars, which done he slept his hour (custom made him critical to proportion it) in his desk in the school but woe be to the scholar that slept the while Awaking he heard them accurately and Atropos might be persuaded to pity as soon as he to pardon when he found just fault In Merchant Taylors' School he taught boys who became distinguished (*e g* Lancelot Andrewes afterwards Bishop of Winchester, Thomas Lodge, lawyer sailor romancer, satirist physician translator of Seneca du Bartas, a lyric poet Sir Edwin Sandys traveller and colonist Sir James Whitelocke Justice of the King's Bench Matthew Gwinne Professor of Music at Oxford and the first Professor of Physic in Gresham College and Edmund Spenser the poet) Sir James Whitelocke (*Liber Famelicus* Camden Society Reprint 1858 p 12) bears witness to the good instruction under Mulcaster in Hebrew, Greek and Latin and states that Mulcaster took care that skill in music was acquired

Scholars' Plays. The Merchant Taylors' schoolboys under Richard Mulcaster performed plays at Queen Elizabeth's Court between 1572 and 1583, and accounts can still be traced for the payment for the children's acting Two representative items may be quoted One instance, in 1572 "for presenting of a play before her Highness upon Shrove Tuesday at night vj^{li} xiii iiij, and for a mere reward by Her Majesty's owne commandement xiij^{li} vj^{s} viij^{d}—in all xx^{li}" A second instance

" Woorkes doone and Attendaunce geven upon the New making Translating ffytting ffurnishing, Garnishing, setting forth and taking in agayn of sundrye kindes of Apparell propertyes and Necessaries Incident for One Playe shewn at Hampton Covrte before her Majestie by Mr Mulkester's Children, And our Maske likewyse prepared and brought thither in Rednesse, but not shown for the Tediusnesse of the playe that nighte " (1573–1574)

It has been suggested that Shakespeare may have had Mulcaster in mind in the character of the schoolmaster Holofernes in *Love's Labour's Lost* who was a pedant and cant entertainer The tediousness of the play in the " accounts mentioned above is certainly paralleled in Mulcaster's writings and Armado's description of Holofernes would not be inapt for Mulcaster " I protest the schoolmaster is exceeding fantastical—too too vain too too vain

Educational Ideas Mulcaster s books are entitled (1) *Positions Wherein Three Primitive Circumstances Be Examined Which are necessarie for the Training up of Children either for Skill in their booke, or health in their bodie* (London T Vantrollier 1581) [4° pp vii 303] (2) *The Elementarie Which entreateth Chiefle of the right writing of our English tung* (London T Vantrollier) [only the first part issued Mulcaster evidently intending a further Part] [8° pp v 272] (3) *Catechismus Paulinus In usum Scholae Paulinae* 1601 (4) *Cato Christianus* a work mentioned by a seventeenth century writer John Robotham in a translation of Comenius s *Janua Linguarum* but of which no copy is known to exist It may be a *lapsus* in reference

Mulcaster s educational views are far in advance of his age He is specially distinguished for advocacy of—

1 The vernacular as the medium of instruction and the postponement accordingly of the too early teaching of the classical or other languages

2 The claim to culture and learning of all those who have the wit to profit by it whether rich or poor

3 Training colleges for teachers " Is the framing of young minds and the training of their bodies so mean a point of cunning ?

4 Education for girls and women as well as for boys and men Higher education for girls who have good abilities

5 Physical training for all—boys and girls, teachers and pupils [*Cf* for half a century earlier, Sir Thomas Elyot (*q v*)]

6 Liberal education, with disinterested aims for the elementary schools

7 The best masters to be reserved for the lowest classes, and to be paid the highest salaries, and to have *smaller* numbers of pupils in them than the classes at the top of the school

8 Drawing and music to be taught in a school

Mulcaster further makes a strong protest (explicitly following J L Vives) against over haste in the task of educating the child

Mulcaster's teaching period (1561–1608) covers the great Elizabethan period of English literature, and his attitude towards the position of the vernacular and native literature associates him with the contemporary recognition of the value of English as an instrument of teaching and of expression in literature He compares English with Latin " I love Rome, but London better I honour the Latin but I worship the English Why should not all of us write in English ? I do not think that any language, be it whatsoever, is better able to utter all arguments either with more pith or greater plainness than our English tongue not any whit behind either the subtle Greek for crouching close or the stately Latin for spreading fair " Nor should it be forgotten that in a work on education (the *Elementarie*) in 1582, just before the time of Spenser and Shakespeare Mulcaster wrote " Whatsoever shall become of the English State the English tongue cannot prove fairer than it is at this day, if it may please our learned sort to esteem so of it and to bestow their travell upon such a subject so capable of ornament, so proper to themselves, and the more be honoured, because it is their own " Mulcaster advocated the study of the vernacular before Latin, a position urged previously by Ramon Lull (*q v*) F W

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MULLER'S SYSTEM OF PHYSICAL TRAINING. —(See Calisthenics and the Physical Training of Girls)

MUMPS —(See Ailments and Infectious Diseases in School Life, Infection and School Children)

MUNDELLA, ANTHONY JOHN (1825–1897) — Statesman, was the son of an Italian refugee who settled in England about 1820 He was educated at a national school in Leicester until 9 years old, when he went to work in a printing office He subsequently became engaged in the hosiery trade, and in 1848 became a partner in a firm of hosiery manufacturers From early years he was an enthusiastic politician and entered on his political career as a Radical advocating religious equality, free trade, and the claims of the working classes In 1866 he formed the Nottingham board of conciliation in the glove and hosiery trade the first permanent and successful institution of the kind in England This action led to his entering Parliament He defeated Mr Roebuck at Sheffield in 1868 and from that year until his death he was one of the representa tives of that city In Parliament he devoted his energies to securing legislation in favour of the labouring classes and was particularly earnest in advocating popular education In 1874 he failed to secure the passing of a Bill for reducing the hours of labour for young children in factories, but his agitation led to the Factories Acts of the same year, which effected most of his objects His greatest Parliamentary work was connected with education As a worker and as a manufacturer he had seen the value of education, and his business connection led him to study systems of education in Prussia and other German States He gave great assistance to Mr Forster in 1870, and did much to smooth over the religious difficulty He was a strong advocate of compulsory education, which he made universal

in 1881 Being appointed vice-president of the Committee of Council on Education in 1880, his administration was chiefly marked by the Code of 1882, in which more attention was directed to methods of teaching than to the number of individual passes, and which recognized manual employments and organized play in infants' schools It also introduced the "merit grant" and encouraged the development of specific subjects

Outside his official work Mr Mundella laboured in connection with many other branches of educational activity including the higher education of women the teaching of the blind deaf and dumb and the raising of funds for children s meals In 1894-1895 he was chairman of the Departmental Committee on Poor Law Schools and was instrumental in securing valuable reforms

MUNICH, THE UNIVERSITY OF.—In 1459 Louis Duke of Bavaria obtained from Pope Pius II a Bull for the establishment of a university The University was erected at Ingoldstadt several years later and was opened in 1472 with 489 students The University received from its founder the privileges of Vienna which had previously served as the university town for Bavaria and the constitution was modelled on that of Vienna In 1800 the University was removed to Landshut and in 1826 to Munich The Papal Bull founding the University contained a provision that candidates for degrees should take an oath of obedience to the Holy See but in recent times there has been a revolt against the authority of the Pope The faculties of the University are those of philosophy law medicine and theology (Catholic) New buildings were erected in 1840 and in 1868 a technical college was established In normal times the students enrolled exceed 6,000

MUNICIPALITIES AND COMMERCIAL EDUCATION—A survey of recent educational history shows a surprising neglect of the claims of commerce to be included in a scheme of national education The prominence given to the industrial side of technical instruction, and the extension of secondary education to the children of artisans, have doubtless been the cause of the ignoring of the demands of the young people who require special training to enable them to deal efficiently with the ever increasing demands of commercial life

Many conferences on commercial education have been held, and various schemes of examinations devised to little effect Had it not been for private schools the opportunities for day instruction would have been meagre indeed Thanks, however, to the policy of several committees a distinct forward movement has lately appeared, and there is now a keen appreciation of the fact that the progress of this movement will be greatly accelerated by the demands that will be made upon British commercial enterprise in the future

Many principals of business houses are now ready to acknowledge the value of the commercial training offered to their employees, and are willing to co-operate with the school by insisting that their junior assistants shall attend classes many employers paying the fees and supervising the progress of the students by requests for reports of attendance and homework

An enlightened policy has also been manifested by the Board of Education to whom credit is due for its increased financial support and for the appointment of two inspectors of commercial education, men who hold decided views and a firm belief in the need for advance in this branch of education

Work of the Manchester Committee. It is not possible here to describe in detail the operations of the great municipalities in dealing with commercial education it may be more profitable to outline the history and progress of the work of the Manchester Committee, which may justly claim to be the pioneer in the development of commercial education Until 1889, little more than elementary classes in shorthand, book-keeping, French German and Spanish were held, and these only during the winter months, each teacher was an independent unit, no head master exercising a co-ordinating influence or advising the students, who were left to select a subject as caprice dictated In that year the Manchester Authority made a decided advance by the organization of an Evening School of Commerce with a head master who was not only an experienced and successful teacher but also a professional accountant, familiar with the requirements of the commercial community Practical and systematic courses of instruction given by business men were substituted for the single subjects taught for the most part by teachers with little knowledge of business affairs In place of the one lesson a week for a period of twenty five weeks which had previously contented students attendance on two or three evenings during a session—extending from September to July—was arranged During the first session, 300 students were enrolled, and year after year witnessed the development of the instruction and the extension of the courses

The Education Act, 1902, granting greater financial help, led to a further advance in the curriculum of the Municipal School of Commerce, which was reorganized into a Lower School, a Higher School and a School of Languages The membership increased rapidly and the accommodation was taxed to such an extent, that the fees had to be advanced and the minimum age raised to 17, while the Education Committee established in various parts of the city twenty-three branch schools to provide first and second year courses of study for juniors preparatory to the more intensive work of the Central Institute During the session 1912-1913 over 4 000 students were enrolled at the Municipal School of Commerce and 4,500 in the branch schools

On leaving the school at the age of 14 scholars are granted free admission to one of the branch commercial schools situated in all parts of the city along with other students who have not taken up educational work until a later age they are not allowed to study a single subject but must follow a prescribed course occupying two hours on each of three evenings in the week Separate courses are planned for shorthand clerks, junior clerks book-keepers, and shippers' clerks, the last including one language selected from French, German, or Spanish The courses extend over two years, and at the end of each winter, examinations are held by the Committee the examiners being members of the staff of the Central School of Commerce On the results of these examinations, Exhibitions tenable for two years at the School of Commerce are awarded

Exhibitioners follow a two years' course of a more intensive and liberal character in the Lower

School of the Central Institute, after which they are in a position to specialise on one of the following diploma courses—

Accountancy	Foreign Trade and Correspondence
Secretarial Work	Foreign Languages
Banking and Economics	Typists' Secretarial
Municipal Work	
General Commercial	

These diploma courses involve two or three years' progressive study, together with the requisite attendances homework marks, and examination results (Advanced Grade, Royal Society of Arts, and internal examinations) In languages, oral and written tests are required

The following two courses will serve as examples—

Banking and Economics.

Fifth Year.	Sixth Year
Arithmetic	Advanced Accounts
Book-keeping	Practical Banking
Theory and Practice of Banking	Commercial Law
Commercial Law	Economics
Economics	Public Finance

Foreign Trade and Correspondence.

Fifth Year	Sixth Year
Theory and Practice of Banking	Commercial Law
Commercial Geography	Commercial Geography
Two Foreign Languages	British Markets
	Two Foreign Languages

Should the youth be intended for a professional career his time in the Lower School is spent in taking the Professional Preliminary Course, after passing this, he enters the Higher School to follow the intermediate course for two years, which leads to the Final Course planned for him The Professional Courses include Chartered and Incorporated Accountants Chartered Institute of Secretaries, Institute of Bankers Institute of Actuaries, Incorporated Law Society, Institute of Municipal Treasurers and Accountants (Incorporated) National Association of Local Government Officers, Chartered Insurance Institute Faculty of Insurance, Railway Companies' Course, Teachers' Training Classes, and University Matriculation Courses

The Higher School also makes provision for business men who do not require any of the regular courses Adult students may attend special lecture courses given by professional and business experts on Accounting, Commerce, Economics, Insurance, Law and Literature The following are illustrative Banking, Costing, Income Tax Practice British Markets, Advertising Cotton Trade and Markets, Economics of Commerce and Industry, Public Finance Social Economics, Marine Insurance, Bankruptcy Law and Practice, Company Law, Conveyancing Railway Economics.

In an extensive shipping centre like Manchester, where knowledge of foreign languages is of great importance, ample facilities for their acquisition should be afforded, we, therefore, find in the School of Languages each evening, usually from 6 to 10, carefully graded classes in French German, and Spanish, and also in Portuguese, Italian, Russian, Danish, Dutch, Modern Greek, Arabic, Japanese, Hindustani, and Swedish There are highly successful literary and debating societies in each of the first four languages The minimum age of admission to the Language School is 19, and each student must give evidence of a good knowledge of English, or be relegated to the Lower School to take English along with one language in the Shippers' Course.

Distinctive Features of a Successful School. The distinctive features which have contributed so much to the success of the school are—

1 There is a staff of lecturers and teachers engaged for their special knowledge and experience of the branch of work undertaken by them Professional accountants, barristers, solicitors, cashiers, correspondents, and secretaries of proved teaching ability are included among the instructors.

2 The work is organized, directed, and supervised by a Principal possessing an intimate knowledge of the requirements of a commercial community, combined with long experience in educational work

3 The course of study for every student is arranged under the supervision of the Principal

4 The time-table comprises a duplication of classes, and is arranged to suit the convenience of students with limited time, and of those working late hours

5 The award of Course Certificates to students who comply with the regulations and complete a two or three years' course in the Lower School

6 The award of School Diplomas to students on the successful completion of a two or three years' course in the Higher School These diplomas carry with them the Associateship of the school

The main principle in the organization has been to study the requirements of Greater Manchester (students attending from towns within a radius of 30 miles), and to frame practical schemes of instruction given by experts which shall not only attract students to join the courses, but also retain them for lengthy periods by the incentive of the reward of a valuable diploma

Before the beginning of each session, besides the complete school prospectus, special circulars are forwarded to those likely to be interested (*e g* circulars dealing only with the Bankers' Course are posted to the manager of every branch bank in the district, and insurance circulars to every insurance manager, with a request that they may be distributed to the members of his staff) In the case of the Grocers classes which extend over a three years' course, a special shop distribution is arranged and for the Faculty of Insurance course, each Friendly Society official is circularized Several weeks before the opening of the classes in September, there is a constant procession of intending students, each of whom must interview the Principal and be advised by him in the planning of a suitable course to be entered upon, or continued from the previous session

The students obtain the all-important factor in achieving success, *i e* effective, expert teaching The teachers and lecturers, although not all academically trained, are selected because they are experienced business or professional men interested in their work and in the progress of the students Further, most of the staff have at one time been students of the school, and so understand its methods and are imbued with the spirit and traditions of an institution to which many of them are indebted for advancement in commercial positions They, therefore, regard it as a privilege to take some part in its work The wider influence of such a school may be indicated by the following passage from the report of the Chairman of the Canadian Royal Commission on Industrial Training and

Technical Education, after visiting the school in 1911—

"At the Municipal School of Commerce, what impressed us most was the earnestness of the students and the unmistakable interest and enthusiasm of the instructors The counting houses and offices of Manchester must be immensely enriched in the quality of their working staffs through the classes and courses at this Institution In connection with this, I can say that the Commission has not hitherto found any institution where the courses in the Higher School are so discerningly differentiated to meet the needs of private business interests and those engaged in the public service '

In 1917 a Day Department of the High School of Commerce was established as a post secondary school for students of both sexes over 16 years of age The aim of the school is to provide a sound and thorough business training, and to widen the students' outlook upon the operations of Commerce Although the instruction is necessarily mainly vocational, the claims of Commerce to be studied on liberal educational lines are regarded as essential

The training includes the cultivation of the important business habits of accuracy, neatness alertness, and initiative In addition to the Certificate and Diploma Courses for full time students part-time courses are held for selected employees from leading commercial firms and mid day language classes are held to allow business men and women to study languages in an intensive manner The Manchester Chamber of Commerce have a scholarship scheme for the school and the President of the Chamber endorses the diplomas granted at the completion of the two years' full time courses An Advisory Committee of the representative business men of Manchester has been formed the members of which interest themselves in the work of the institution In little more than two years the Day Department has achieved a great success the enrolment for the session 1920–21 reached a total of 800 students

The Municipalities of Liverpool Leeds Sheffield, and Birmingham have, during the last decade, made considerable advances in commercial evening school work, but, in the main, they have followed the lines laid down by Manchester and therefore it would be of little use to enter into details A N

MURRAY, LINDLEY (1745–1826) —He was a native of Pennsylvania, and was educated at Philadelphia in the school of the Society of Friends He studied law and during his early manhood made a considerable fortune by legal practice and mercantile pursuits In 1784 he came to England and settled in Yorkshire giving himself up to literary work In 1795 he published the first edition of his *Grammar of the English Language* a book which soon became popular and which passed through many large editions It was followed by a book of Exercises and a Key an English Reader, and a Spelling Book The Grammar occupied its place as a standard text book through more than half the nineteenth century and had few rivals For many years newer grammars were based upon it keeping alive the "Potential Mood' which is now discarded, and like Murray drawing no distinction between participle and gerund

MUSÉE PÉDAGOGIQUE, THE —Founded in 1879, the Musée Pédagogique was at first designed to be specially "a pedagogical museum and central library of elementary education, containing collections of scholastic appliances, records and statistics, and French and foreign text-books ' To carry out these intentions in 1885 the quarters it now occupies (41 Rue Gay-Lussac) were assigned to it

Later, an extension of its scope was contemplated, and a department of the Ministry of Public Instruction—the Office d'Informations et d'Études—which had been established in 1901 was added Since 1903 then it has been called the Musée Pédagogique (Library, Office, and Museum of Public Education) Its change of name implied (1) that the institution dealt with all grades of education, not merely elementary and (2) that it possessed in the Office a system of filing and examining records which had not existed previously

The Library In 1880 and 1882 the Library was enriched by the 6 848 works belonging to the collection of M Rapet Hon Inspector-General of Education In 1884 it contained 10 127 works besides Subsequently came further acquisitions particularly some sixteenth century pedogogical works In 1886 and 1889 the Catalogue (2 vols , and 1 vol supp 8vo) was printed with authors' names alphabetically arranged This was the nucleus of the collection of to day which contains upwards of 80 000 volumes Of these more than 50 000 form the general library valuable in the history of pedagogy and its developments Other contents are French official reports including a departmental series foreign reports (valuable material for the Office) a collection of French and foreign classics (for exhibition reference and comparison), and numerous French and foreign periodicals chiefly educational The Catalogue of the general library is arranged alphabetically under authors names and about 750 other titles (*e g* "Periodicals ') printed prominently against the margin There is also a department of MSS (educational notes and investigations) and a stock of educational publications issued on the occasion of universal exhibitions the catalogues of which are printed Not only is it a reference library but books may be borrowed for home study by members of the teaching profession and candidates for scholastic appointments

There has been a circulating library for the provinces since 1882 It consists of a selection of works (now amounting to more than 600 volumes) continually revised and added to and containing numerous copies of each book which are on loan exclusively to members of the teaching profession in the departments

From 1882 to 1892 the Musée Pédagogique did useful work in publishing its *Mémoires et Documents Scolaires* (1st series 120 vols 8vo) and *Monographies Pédagogiques* (*Mém et Doc Scol* 2nd series 60 vols 8vo) When the amalgamation took place with the Office a series which the latter had begun became the third series of publications of the Musée Pédagogique and already contains 21 volumes 8vo

The Office. The Office was long occupied with the affairs of the institution of foreign language masters in French *lycées*, colleges, etc and of French masters abroad It has retained this work, but aims more and more at becoming the centre of "investigation and research ' for which the combination of the information it gathers with that of the Library qualify it

The Museum. The Museum has been much augmented by gifts, grants, and loans of school

furniture teaching apparatus etc It has been enlarged and re-arranged several times Grouped round the great French and foreign halls are rooms reserved for special exhibits (mathematics and physical science natural history geography, drawing etc) School architecture, "art in the school," and the history of writing are all represented

Other Activities. The department containing lantern-slides was added in 1896 Its growth was extremely rapid At the present time comprising more than 700 series of different subjects each series containing on an average ten different combinations, the collection of boxes of slides is circulated in Paris and the provinces for lectures by members of the teaching profession and officers of the Army and Navy Most of the series are accompanied by printed notes

Many other educational organizations have received from the institution temporary or permanent hospitality (*e g* the management of the *Revue Pédagogique* [1882–1903] the Office des Œuvres Auxiliaires et Complémentaires de l'Ecole [1903–1915] and the permanent exhibition of needlework [1891–1913])

From time to time courses of pedagogy for various examinations have been arranged and, since 1903 discussions on teaching methods and lectures on school hygiene (originating in the Laboratory of Hygiene founded 1910) The matters dealt with under these last two heads are reproduced in part in the third series of the Museum publications G A H

MUSEUMS —These are absolutely essential to educational progress but they must be brought up to the standard of educational requirements Unfortunately in this country museums have not been considered seriously until quite recently, and all but a very few are hindrances to knowledge rather than helps But these few are having their influence in the right direction In London there are, of course, the national collections—the British Museum, the South Kensington Museum, Kew Gardens and the National Portrait Gallery At last moreover London has woke up to the fact that she has a local history, which should be illustrated by museum collections The City Corporation, to their credit, established a museum many years ago, which is now being arranged on scientific lines In 1910 thanks to private munificence a London Museum on larger lines was founded In 1901 the Horniman Museum was presented to the London County Council by Mr F J Horniman, M P Like other museums it was more a collection of curiosities than an arranged exhibit of objects capable of telling their own story, but it proved to be sufficiently complete to convert into an educational institution The Council at once turned their attention to this problem, with the result that London became possessed of the first well-established educational museum Cardiff is now building one Oxford and Cambridge possess museums of this kind The most remarkable example, however, is at the little village of Farnham, in Dorsetshire, established by the late General Pitt-Rivers, and containing, besides a magnificent local collection, an anthropological collection of great value But the great majority of local museums remain in a terribly incomplete and hotch-potch condition, and are quite useless for educational purposes

The Museum and the School. Every locality now possesses its school, and the natural adjunct to this is the museum Huxley's lecture on a piece of chalk and the descriptive notes of Darwin's method of research from Nature herself, should be the texts for museum work in every school They would begin to arouse interest in museums in the mind of the young student To consider the case of organized teaching the teacher would, first, direct attention to the natural history of the district, taking his students, by means of well-written descriptive labels, to the specimens which illustrate the history of animal, plant, and, where possible, river and sea-life of the district He should explain the limitations and the causes thereof, and then take his students to the places in the general sections of natural history where the local sections scientifically fit in The fact of these being a system of classification is the first point to bring home, the general characteristics of this classification is the second point, and then finally, the details which determine the place occupied by each object Museum terms are, as a rule, difficult for the young mind to grasp but constant use is the best means of overcoming the difficulty The species, the genus, the family the order, the class are necessary divisions of animal and plant life which must be understood before details can be grappled with One of the most interesting of details is variation—variation in size, form and colour—and it is only when these terms and conditions are understood that the great problem of all can be approached, namely, the struggle for existence

The Museum and the Student. Secondly, there is the case of the individual student, the member of the general public who has been attracted to museum work by the practice of visiting museums A student of animal or bird life can start on a personal investigation only by, first of all, bringing his own specimen into strict comparison with a standard museum specimen He knows, then, that he starts with a normal specimen and not with a freak or deformity Observation of every kind should be encouraged Students living in the country who could learn how to observe closely the smaller minutiae of changes in the living specimen, and their ascertained and definite relationship to events or facts which might be fairly considered as causes of the changes, would be assisting the scientific work of the country greatly A child may note a fact that may escape the observation of an older person, however well trained and it is because of the lesson which museums afford in the suggestion for observation that their educational value is of such vast importance That animals should have permanent ways of gaining their livelihood, instincts, methods of defence, and social habits are facts capable of being taught in museums, and then being transferred to the field for further research The museum however, must come first Very few people (says Sir William Flower) have any idea of the multiplicity of specimens required for the working out of many of the simplest problems concerning the life-history of animals or plants And these specimens can only be supplied by means of museums

Contents. The study of man brings into play every atom of curiosity in the mind of an ordinary healthy person, and it is practically only from museums that he can obtain the necessary information Every part of the world supplies evidence of the existence on its surface of mankind The evidence consists of an object common to all parts

—namely, the implement which man used, first, no doubt, to defend himself with and then for gaining food supplies and other necessaries The student should be taught in what geological stratum each class of prehistoric implements is to be found, and to watch the operations of the builder and the excavator of to day for specimens of these implements Specimens and varieties are required for various purposes, and the story of the discovery of eolithic implements affords remarkable testimony to the value of independent and constant research Every local museum should contain properly classified specimens of the implements found in the locality They are the only historical data which can supply the evidence of man's earliest existence and the extent and nature of his settlement Knowledge of even later periods than these is only to be found in museums A destroyed civilization like that of Rome in Britain is only to be understood by the collection of remains—buildings, pavements, columns inscriptions objects of worship, household utensils tools implements of all kinds personal ornaments and burial remains The museum at Reading tells the story of Roman Silchester (*Calleva Atrebatum*), just as the museum at Naples tells the story of the destroyed Pompeii Even the later Anglo Saxon period is chiefly known from its museum objects with the addition of a few architectural fragments of ecclesiastical buildings The great civilizations of the past (Egypt, Babylon Greece Mediterranean) have only been known of late years thanks to the use of the pick and the spade, and the discovered objects are only to be classified and studied in museums Natural history and human history therefore are the two great divisions of museum work It is only for practical purposes that they are so divided As Sir William Flower has so well put it "An anthropological museum to be logical must include all that is in not only the old British Museum but the South Kensington Museum and the National Gallery' Indeed the whole range of human knowledge comes within the compass of efficient museum organization

Folk Museums. Museums can do more even than this They can represent the life of the people of a country in a fashion which must appeal to the most unromantic of minds—to a public which it would be almost impossible to attract in any other fashion This movement has been termed "the folk museum," "the peasant's arts museum" and so on, and has found its greatest expression in the Skansen Museum at Stockholm—an open-air museum occupying a hill just outside the town At the entrance, which is at the foot of the hill you come upon an example of the modern village house, furnished in strict accordance with typical examples As you rise from stage to stage of the hill there are specimens—sometimes facsimile copies, sometimes the original structures themselves removed from their sites—of every age represented by culture stages the homes the land implements, the house furniture, the clothes, every item of home life which can be recovered or copied, until at last you stand on the summit examining the prehistoric dolmen and stone or cave dwelling The effect is almost magical Every branch of knowledge is represented animal life in its palaeontological stage and its living stage, industrial and mechanical life defensive and offensive life, food products, religion and beliefs—in a word, the life of Sweden through the ages

Specialist Museums. The specialist museum must not be ignored from the educational stand-point The finest example is probably that of the Royal College of Surgeons in Lincoln's Inn Fields It not only includes specimens necessary to surgical and medical science but contributes to the science of anthropology by its great collection of human skulls from all parts of the world More humble, but not less useful specialist museums are those which illustrate industrial or manufacturing products peculiar to the district in which they are located A good example is the furniture museum established by the London County Council at Shoreditch, the centre of furniture manufacture in London Such museums appeal to the workman as much as to the general public He may inspect a technical point in the construction of objects upon which he is actually engaged, which may suggest improvements in his own workmanship Above all things, he may grow to emulate his predecessors in the perfection and care of their work

A Reference Library A necessary adjunct is a library of the best scientific reference books on all subjects represented in the museum It enlarges the interest and the knowledge of the museum worker both the home worker and the field worker It lifts him out of narrow lines, and endows his research with the accumulated experience of other workers

There is a great and pressing need for the establishment of museums—general and special—throughout the country, but both founders and curators must work on the basis of their educational purpose A local museum does not want an Egyptian mummy in the midst of local objects It has to collect all objects, great and small, which can contribute the minutest fragment of history to its own territory and it has to be quite certain that it and it alone, is the one authority which can properly do this work It is what outsiders will visit the museum for The geographical extent of animal or bird life of archaeological remains, of forgotten usages and of bygone domestic life can be built up only by museums, and man can understand himself only by understanding his environment and the slow steps by which he has become conscious of the value of his past G L G

MUSEUM, THE SCHOOL.—The school museum does not signify a glass-fronted cupboard with specimens for ever on view, objects always in sight are seldom observed and never interest Store them in closed cupboards and exhibit them only in appropriate sections in a glass-topped case or blinds, to be raised only at the proper moment, may be fixed to the conventional glass-fronted cupboard Either contrivance will stimulate curiosity, arrest attention, and ensure observation

Objects. Specimens may be grouped into (1) living (2) dead, and (3) seasonal objects.

1 Animals insects, and water-life are most interesting to a child, and little artifice on the part of the teacher is needed The moving panorama of the aquarium or vivarium—the nesting troubles of a stickleback, a dormouse about to become dormant a hedgehog seeking winter quarters a caterpillar hunting for a fitting environment for its metamorphosis—all compel attention

2 Fossils, minerals, flint implements, shells, eggs, stuffed animals, preserved butterflies, and curios often need considerable treatment to be made at all interesting "Movement"—the continual changing

of the objects under consideration—gives to a heterogeneous inanimate collection a little of the moving force possessed by the living Objects, too, may be associated with their purposes, thus, flint implements and curious articles of dress acquire significance by illustrating a history or a geography lesson

3 Buds leaves flowers fruits, always fascinate and aid in the cultivation of the appreciation of the beautiful These objects can also be shown "seasonally" (*e g* birds' eggs during the nesting season in spring, butterflies in the sunny months of summer, and fruits in autumn, and plant life can be exhibited according to the sequence of blooming)

Eggs can be displayed in proper time order, from the rook and blackbird in March to the nightjar and marsh-warbler in July Butterflies too should be on view in correct sequence, from the Cabbage White and Green-veined White of April to the Brimstone and Red Admiral of September The life-history of plant specimens should be linked up similarly

A microscope is essential to open up that other world—the lower forms of life with their marvellous and beautiful structures Probably few will ever enter that world unless they do so at school

A small reference library too, is useful for original research, and for the cultivation of a student-like attitude towards a subject The association of this with the museum enables a pupil to take his own initiative in the elucidation of many a difficulty

Methods The following are perhaps good ways of using the school museum—

1 Whenever possible, allow the pupil to handle the object

2 As a rule do not at first name the object

3 Place the object where it can be easily examined and fasten to it the label 'What is it ? An instructive discussion should result with much oral description, helpful in the development of verbal expression

4 After the object has been duly observed, make a drawing of it, add all the necessary information, and leave the pupils to study both before giving them any explanation

5 When possible give an exhibition of some definite subject (*e g* a series of flowers which often escape notice such as those of the oak ash beech, and elm of shells—land, fresh-water and marine, or of some particular species of shell with all its fascinating varieties)

6 Attach literary excerpts to particular exhibits, and leave the pupils themselves to apply the reference from their own knowledge and experience

7 Attach an apt quotation to the blind of the show-case before disclosing the exhibit This will stimulate curiosity

8 When objects are obtainable in large quantities, give one or two specimens to each of the pupils Allow them a little time, first for *silent* private observation, and then for discussion among themselves. Finally, call for their conclusions, and summarize

9 During one year of a pupil's school life, use for recitation literary selections which co-ordinate with the seasonal plant exhibit. The impression conveyed in this way will, in after years, give great pleasure, as recurring conditions recall them to the mind. J WINKWORTH

MUSIC FOR THE BLIND, ROYAL NORMAL COLLEGE AND ACADEMY OF.—(Westow Street, Upper Norwood, Surrey) This was founded in 1872 to afford a thorough general and musical education to youthful blind persons possessing musical talent, to enable them to maintain themselves The founders of the College, recognising the fact that other kinds of handicraft suitable for the blind were thoroughly taught in various institutions throughout the country, confined themselves to the special work of training the blind as teachers, organists and pianoforte tuners Pupils of both sexes are admitted at any age from 9 to 21 years, and attend until their education is completed The school accommodates a hundred pupils and is usually full Private pupils are received at special rates The College possesses several scholarships The three departments of general education music, and tuning are furnished with the most modern appliances and are under the charge of experienced teachers specially adapted to their part of the work

MUSIC HALLS INFLUENCE ON ADOLESCENTS.—(See ENVIRONMENT AS EDUCATION)

MUSIC TEACHERS' ASSOCIATION.—Founded in 1908, the chief objects being to encourage progressive movements in the teaching of music, to advance the teaching and studying of music as a literature to demand systematic ear training from infancy, to further singing at sight as the chief aim of class singing, to promote the formation of Musical Appreciation classes and to urge the necessity for a more thorough preparation for the art of teaching music Membership is open to those engaged in teaching studying to become teachers or interested in the advancement of education

MUSIC, TWO PART.—(See TWO PART MUSIC, FOUR PART MUSIC ARRANGED AS)

MUSIC UNION, THE GIRLS' SCHOOL.—This was founded in 1904 to further the progress of music in secondary schools for girls throughout the British Empire, and to discuss matters connected therewith to stimulate teachers by providing opportunities of social intercourse with professionals and to encourage new ideas and the consideration of methods

MUSIC, VOCAL.—(See VOCAL MUSIC, THE TEACHING OF)

MUSICAL EDUCATION, THE AIMS AND LIMITS OF —It is unlikely that there is any branch of education in which the conflict between the claims of technical efficiency and understanding is more intense and difficult to accommodate than that of music The majority of musical students are destined to be performers, and their highest aim must be to interpret, and for the purposes of interpretation they require a comprehensive technique and the widest possible development of sympathetic insight into all kinds of compositions and experience proves that the means to be taken to attain these two requirements are not easily harmonised together As is inevitable, varying stress is laid upon the respective claimants for attention by men of various disposition and intelligence Not long ago it was a favourite theory that, if technique could be made so comprehensive as to be all-sufficing, it would serve for any interpretation that could be required of it Therefore, education was "technique, and again technique, and yet again

technique" Wiser counsels prevailed when men pointed out that, if all the energies are concentrated on the attainment of mere technique the claims of the mind are neglected and the development of understanding is such a very arduous and exacting operation that it cannot be left to stand waiting while any other work monopolizes attention Excessive concentration on mastery of resources defeats itself not only because it dulls the faculties but because the learners miss the help in the vanquishing of difficulties that is provided by the pleasure which art gives to those who are susceptible to it The finer and the more aspiring the artistic nature the more inevitable is the rebellion against persistent mechanical drudgery—and the rebellion is often justifiable Young and ardent natures thirst for the joy which real music gives them and for the expansion of the range of their enjoyment by adding to their understanding and they even suspect that constant drudgery will blunt their finer perceptions

But the majority of those who have to be educated as performers have more natural aptitudes for technique than for interpretation and inasmuch as the majority of those who constitute their audiences will be much more delighted with mere feats of virtuosity than with fine interpretation the temptation to develop technique by mere mechanical processes is obvious It does not do much harm to those whose souls cannot rise above feats of skill and it will be easy for them to obtain a vogue as concert performers and if they apply their gifts to really fine music under the constant supervision of very intelligent teachers who can tell them how to play every phrase they may pass muster as interpreters though they have no capacity to understand what they interpret themselves They belong to a different order of beings from those who have insight and can hold communion with the noblest thoughts that composers have given to the world

Technique The difference between the two types is so marked that the bias implied must be recognized if education is to escape being at cross purposes with strongly marked mental idiosyncrasies There are, on the one hand even at average levels those who delight in details and in overcoming mechanical difficulties and have no aptitude for generalizing and on the other hand there are those who are ardent to generalize from every new thing they come across and are impatient of details till they seem to mean something There are dangers which threaten both types The former are in danger of never understanding anything and the latter of understanding things wrongly If they are singers the former are in danger of never being able to sing anything that needs understanding or musical feeling and the latter are in danger of destroying their voices before they are fit to sing anything at all If they are instrumentalists the former are in danger of gravitating towards the music hall and the latter of appealing only to circles of sympathetic friends The object of education would be to make their artistic outfit as complete as the circumstances allow and with that end in view the former would be the better for having the claims of understanding always kept before them, and the latter for being persuaded of the advantages of discipline and accuracy and loyalty to detail

As musical feeling is so sensitive and delicately poised, the ideal would be to develop mechanical facility as far as possible in real musical terms, or at least with the special musical result kept in view It must be admitted that when mechanical results are aimed at the undisguised mechanical processes are less likely to be injurious than studies which pretend to be musical and are not It is likely, for instance that a great deal of obtuseness is produced in singers by the commonplace studies they are made to practise which they sing with nonsense syllables, and there are plenty of instrumental studies which are quite as depressing That a vast amount of technique can be developed by essentially musical means is shown by the magnificent studies of Chopin and Liszt and even by such delicate little musical pieces as those of Cramer But there is a large range of technique which seems to be unattainable except by mechanical practice such as the requirements of voice production in singing and of bowing on stringed instruments and facility and equality in passage playing and singing The best that can be hoped for is to keep the essentially musical aims in view and never to allow the mechanical procedures to become the dominant aim so that those who have limited brains may feel the necessity of making the best use they can of what they have got and those that have brains and aspirations may be fortified in patience and realize that even the finest thoughts cannot be communicated without mastery of means to make them intelligible

But it is obvious that such things can be attained only by individual teaching administered by teachers who have insight into the personal and artistic qualities of those they have to teach The outfit of teachers does not consist only of vast knowledge of technicalities but in capacity to discern the personalities of those they have to teach and how to administer those technicalities in relation to their disposition

Class teaching may be quite efficacious in elementary stages when the things that have to be taught are simple and definite and have to be learnt by all more or less on an equality But even then it is serviceable to administer the information as far as possible in its musical sense and content not as details which are divorced from musical realities This has been proved by the astonishing results attained with children by the system of sight reading and ear training which has come into vogue in recent years where the results are obtained by appealing to the musical sense of the children and making them take pleasure in their work as rhythmical music and not by wearying them with details that have no ostensible musical qualities

Harmony and Counterpoint The contrast between the results so attained and the lifelessness which was so often the result of the antiquated methods of teaching harmony is very suggestive It used to be considered quite right and proper to teach harmony as an abstraction without attempting to make music of it It was thought quite unnecessary for the student to have any idea what the harmony sounded like He had to submit to a number of rules which he had to apply, without any idea why they existed in the making of various puzzles Anything more paralysing to the musical intelligence could hardly be devised If it were possible, a student ought never to have to write either harmony or counterpoint without realizing what it sounded like Then he might understand why rules were laid down and what they meant He might be able to understand why certain positions and progressions of chords were recommended, as well as the reason

why certain procedures are objectionable In art, it would be a happy consummation if there were no rules, but only appeals to musical sense to recognize the things that are desirable or beautiful, and the things that are the reverse The greater part of the follies and absurdities which are committed by spirited young rebels are merely the result of the crudity with which rules are laid down It is the same with counterpoint If the young learners have no idea what the combinations of melodies sound like they cannot endorse the instructions of their teachers They have to take everything on trust and have no sense of the interest and beauty of many parts subtly welded into a living unity nor the effect of the relations of their respective movements The most complete results cannot be attained till the musical effect of the combined sounds is heard and felt either mentally or actually in relation to various means of performance The old tradition was that harmony exercises and counterpoint were to be written in the style fitted for voices to sing But the fact is that both harmony and counterpoint that are written for voices are different from such as are written for instruments Instruments can do so many things that voices cannot do that the restrictions which were inevitable when voices were concerned do not apply to instrumental music Even the positions of chords which sound best with voices do not by any means necessarily sound best with instruments The theories of both harmony and counterpoint have lagged behind in not recognizing the vast developments of modern instrumental music The idea at the root of the old practice was that the style of writing for voices was the best possible foundation It is also obviously advisable that the early stages of such studies should be simple and free from distracting complications, and, with such needs in view, the methods which are suitable for chord music are certainly most serviceable It may also be admitted that early efforts have to be kept within certain limitations and that foundations are most successfully laid on simple lines But if a wider field is not opened out when the foundations are securely laid, the expanding mind resents the restrictions, which do not seem to apply to the actual superstructure of real music and very naturally misunderstands why they were imposed and sets unnecessary store by the flouting of them So the higher results would be attained if in advanced standards of both harmony and counterpoint, the exercises were written in styles suitable for various instruments as well as for voices Then indeed a wider field would be covered, the interest would be enhanced, and students would be led in the direction of appreciating varieties of style and the subtle differences which are entailed in diction and detail and phraseology by the idiosyncrasies of instruments as well as voices

This may be regarded as an advanced point in the teaching of theory and may be only fit for few But it would further the realization of the close connection between theory and the realities of music, and arouse a keenness in students which is almost unattainable as long as any part of theory is dissociated from real sounds and musical effects

Composition and Analysis. The tendency of teaching of such scope is towards composition, which is the one branch of music of which the object is not interpretation And, where composition is concerned, it is even specially essential that the distinction of style should be steadfastly impressed, and that harmony and counterpoint should be conceived in terms of definite vocal or instrumental performance The development of the gifts of the composer entails the attainment of insight into the real methods of all manner of different branches of art and into the capacities and limitations of all manner of different means of performance Indeed it entails such a vast array of all sorts of assimilated knowledge that it is not possible to cope with it except by the personal contact of master and individual pupil Only the baldest elements of analysis—which deals with the principles of organization of all works of art—and the knowledge of the characteristics and compass of instruments can be dealt with by class teaching The number of those who will arrive at the most advanced standards will be few, and individual temperaments branch off more and more into isolation as the higher gifts of natural endowment are called into exercise

But then it must be admitted that there is a difference between class teaching and teaching in class In the former the students have to be more or less on an equality, in the latter, their individual standards may be different, because personal attention can be bestowed and the rest of the class benefit by watching a thoroughly efficient teacher dealing with individual difficulties It affords insight into methods of teaching and a clear realization of the difficulties which have to be overcome, and the ways in which they can be overcome Moreover it ministers to the attainment of knowledge of the ways in which music of different periods and styles can be interpreted and made to live, instead of being mere lifeless recitation—and this is one of the most important parts of musical education For it is one of the strangest experiences of music that people soon forget how to treat any music but that of their own time And they have to be brought into a sympathetic attitude towards music of earlier days by being shown how to deal with its phraseology What can be written down on paper is but a small part of what is needful to render any music adequately The living interpretation is attained only by sympathetic insight into the intentions of the composer, and the knowledge of the manner of dealing with his music that he had in mind when he produced it, which was verified by his contemporaries This is often spoken of as tradition—and it must be admitted that what is reported as tradition is often wrong It is generally so when it is based on technicalities and refers to things that induce aloofness instead of sympathy The wider the range of knowledge and the grasp of historic development, the more likely it is that the musician will be able to discriminate between tradition that is alive and tradition that is merely formal The most extraordinary example of such a fact is the coming to life of the music of J S Bach For several generations the world was indifferent to it, because they did not know what to do with it Then a few men gifted with insight began to show the way, and more and more followed till it became some of the most widely loved and cherished music of a time fully a century and a half after the composer left this world The complexity of the subject in advanced stages of art is so great that there is no royal road in the shape of an all-sufficing theory that can be applied to its teaching The progress of the world is maintained by the efforts of infinite

varieties of mind and temperament, contributing in accordance with special aptitudes in all manner of different ways—often in apparent conflict, but sifting out the things that prove serviceable from the mass of the unserviceable by just interpretation of experience And it is the same with art It is better to give free play to the individual idiosyncrasies of teachers than to pretend that they can all adopt the same procedure When they have freedom they can develop initiative, and though they none of them may be perfect they may learn from one another, and the world gain from the results

Art is always progressing and conquering new spheres of expression and technique, and teaching has to progress with it as new problems present themselves to be solved Young students themselves can help in the making of such progress, and it gives them keen interest in their work The ideal of all education is to make those who have to be educated enjoy it What people enjoy they do with extra energy All healthy human beings really want to learn, and they like it best when they are shown how to find out things for themselves It is only the unpalatable way in which education is too often administered that makes unwilling students C H H P

MUSICAL TERMS —These are borrowed from many languages Italian predominating They refer chiefly to (1) force—loudness or softness (2) pace or speed, and (3) style—manner of performance There are also (4) the names of various musical instruments, (5) notational names (*e g* bar, accent clef) and (6) general directions to the performer (*e g Da capo, Volti subito Démancher*)

The following list embraces the expressions most frequently used—

A. (*I and F*) At by for with in etc *à deux mains* with both hands
A cappella. (*I*) In Church style
Acciaccatura (*I*) A short grace note
Adagio (*I*) Slowly
Ad libitum. (*L*) At will—"go as you please"
Agitato. (*I*) In agitated style
Al fine. (*I*) To the end (*e g dim al fine*)
Alla breve (*I*) In *minim* time so many minims to the bar
Alla marcia. (*I*) In the style of a march
Allegro. (*I*) Lively quick
Andante. (*I*) Slow
Animato (*I*) With animation spiritedly
Appoggiatura (*I*) A grace note
Arpeggio (*I*) In harp music style, successive chordal notes
Assai. (*I*) Very
A tempo. (*I*) In time back to original speed
Bassoon. A reed wind instrument of low pitch
Ben (*I*) Well *Ben sostenuto* well sustained
Bind. (1) A sign which ties notes together, or (2) a bracket
Cadence. (1) A shake or trill forming an ending (2) The end of a musical phrase
Cadenza. (*I*) A cadence or a florid ending
Calando (*I*) Becoming slower and softer
Cantabile. (*I*) In singing style
Cantata. (*I*) A short vocal work either sacred or secular
Chord. A number of simultaneous sounds
Chromatic. Belonging to a semitone scale
Clarinet. A wood-wind single-reed instrument
Con. (*I*) With. *Con espressione*, with expression
Counterpoint. The art of adding one or more melodies to a given melody
Crescendo, cres. (*I*) Increasing in tone, becoming louder Sign indication 
Da Capo or **D.C.** (*I*) From the beginning A repeat
Dal Segno or **D.S.** (*I*) From the sign 𝄋 A repeat
Decrescendo or **decres.** (*I*) Decreasing in tone, becoming softer Sign indication 
Démancher (*F*) To cross hands
Diatonic Belonging to a scale consisting of tones and semitones
Diminuendo, dim. (*I*) Decreasing in force
Dolce. (*I*) Sweetly
Duet. A composition for two voices or instruments or for two performers on one instrument
Energico, con energia (*I*) With energy
Espressivo. (*I*) Expressive
Fantasia (*I*) A composition in free fanciful style
Fin. (*F*), **Finale** (*I*) The end, or the last movement
Forte or **f.** (*I*) Loudly
Fortissimo or **ff** (*I*) Very loudly
Fugue, Fuga (*I*) A composition in contrapuntal style built upon one or more subjects
Fugato. (*I*) A composition in the *fugue* style
Giusto. (*I*) Strict
Grave (*I*) Low in pitch or slow in speed
Grazioso (*I*) Gracefully
Gregorian Ancient plain song
H. B *natural* in German music B *flat* being called B
Harmony A combination of sounds pleasing to the ear
Hautbois. (*F*) Oboe or Hautboy
Immer (*G*) Always
Incalzando. (*I*) Increasing in pace and loudness
In tempo (*I*) In strict time
Intermezzo (*I*) An interlude
Istesso (*I*) The same *L'istesso tempo* the same pace
Lamentabile, Lamentoso (*I*) Mournfully
Langsam (*G*) Slow
Largo (*I*) Slow literally broad
Larghetto (*I*) Rather slow
Largamente (*I*) Slowly and broadly
Legato (*I*) Bound connected In flowing style
Leggiero, (*I*) **Légèrement** (*F*) Lightly
Lento (*I*) Slow
Libretto. (*I*) The book of words of a musical work
M Abbreviation of *mezzo* (middling) or manual
M.M Abbreviation of Maelzel's Metronome
Maestoso. (*I*) With dignity
Marcato. (*I*) Marked with emphasis
Mässig. (*G*) Moderate
Meno (*I*) Less
Minuet. A stately dance in triple time
Moderato. (*I*) Moderately
Morendo. (*I*) Dying away, slower and softer
Non (*I*) Not
Obbligato. (*I*) An added essential part
Oboe A double-reed, wood-wind instrument of high soprano pitch
Ohne. (*G*) Without *Ohne pedale*, without pedals
Opus. (*L*) A work *Op* 51, composer's 51st work
Overture. An instrumental introduction
Parlando. (*I*) In speaking style
Partitur. (*G*) A full score

Passionato. (*I*) In impassioned style
Perdendo, perdendosi. (*I*) Losing time and force See *Incalzando*
Pesante. (*I*) Heavily, with weight, impressively
Piacevole. (*I*) Playfully
Piacere (*a*) (*I*) At the performer's pleasure
Piano. (*I*) Softly, abbreviated *p*
Pianissimo. (*I*) Very softly, abbreviated *pp*
Più. (*I*) More *Più forte*, louder
Piacido. (*I*) Peacefully
Poco. (*I*) Little (*e g poco rall*, a little slower)
Poi. (*I*) Then *Poi segue coda*, then follows the coda.
Pomposo (*I*) Pompously
Portamento. (*I*) Sliding from one tone to another
Presto. (*I*) Fast
Quartet. A composition in four parts for performers voices or instruments
Rallentando. (*I*) Abbreviated *rall* Gradually slower
Recitative, Recit., Recitativo. (*I*) Musical declamation
Religioso (*I*) In a devotional manner
Rinforzando, Rinf (*I*) Reinforcing the tone and emphasis
Ritardo, Ritenuto, Rit. (*I*) Holding back, slower
Rubato (*I*) (Lit stolen) Not in strict time
Scherzo (*I*) A playful movement
Scherzando, Scherzoso (*I*) Playfully
Segue. (*I*) Follows
Sehr (*G*) Very
Semplice (*I*) Simple unaffected
Sempre (*I*) Always
Senza. (*I*) Without
Sforzando, Sforzato, Sf (*I*) Strongly emphasized
Slentando (*I*) Slackening the time
Smorzando (*I*) Gradually fading away
Solo (*I*) Alone
Sostenuto (*I*) Sustained
Spiritoso, Con spirito (*I*) In a spirited style
Staccato (*I*) Detached separated
Subito (*I*) Suddenly
Suite (*I*) A series of movements
Supplicando. (*I*) Imploringly
Symphony (1) Introduction to a song (2) An orchestral work consisting of several movements
Tacet. (*L*) Be silent
Tempo (*I*) Time or measure
Teneramente (*I*) Tenderly
Tenuto (*I*) Held, sustained
Tie. See *Bind*
Tranquillo, Tranquillamente. (*I*) Calmly
Tremolo, Tremolando (*I*) Trembling quivering
Troppo (*I*) Too much
Tympani. (*I*) Kettle-drums
Veloce. (*I*) Rapidly
Vibrato (*I*) With trembling tone
Vigoroso (*I*) In a vigorous manner
Vivace, Vivo. (*I*) Lively, quickly

E. M

MUSICIANS, THE INCORPORATED SOCIETY OF.—This was established in 1882, and incorporated in 1892 to promote the interests of members of the musical profession, to aid the musical education of the people, and to encourage research into the history of music It admits as members duly qualified professional musicians, and conducts examinations in order to test the qualifications of candidates for membership A candidate for election as an ordinary member must be not less than 25 years of age, and must have been engaged for at least five years in the art of music as his sole occupation Eminent persons associated with the art of music, though not being professional musicians, may be elected as honorary members

The entrance fee and the annual subscription are fixed from time to time by the Council In 1911 the annual subscription was fixed at one guinea for members resident in the United Kingdom, and half-a-guinea for those non-resident

The Society is organized in sections throughout the United Kingdom, each having its own council and secretary and holding regular meetings The Society as a whole is governed by a general council, having its general office at 19 Berners Street, London, W 1

Examinations. Local examinations in the theory of music and in the practice of vocal and instrumental music have been held by the Society since 1884 They are designed to foster the study of music and to give teachers an opportunity of having their teaching tested "The Examinations act as a guide to both Students and Teachers to help them in their work" (*Syllabus*, I S M) The examinations are arranged in a systematic series of progressive grades In order to assist the teacher at the outset of a child's musical education, the Society provides a primary test and gives a special report on the work presented

In PIANOFORTE PLAYING, the preparatory grade follows the primary test with technical difficulties slightly greater and with simple questions on the rudiments of music selected from the Society's Practical Questions Examinations Book, and an easy practical ear-test The practical part of this grade includes exercises, scales, *arpeggios*, and two pieces selected from prescribed books

The remaining part of the examination consists of five grades of which Grades I and II contain the same items as the preparatory, but with increasing difficulty From this point two years' study is recommended for perfecting the matter already learnt before proceeding to Grades III IV, and V, which provide tests ensuring that the student has been thoroughly grounded in the elements of a sound musical education For Grades I and II a book of exercises is provided, and for each of the three higher grades a book of studies The examination on the Studies or *Études* is intended to test the manner in which the student has been able to apply the knowledge previously acquired

The Society considers that a pupil may take the preparatory grade at about the age of 9, and the Grades I and II at subsequent intervals of about a year, followed by Grade III about two years later so that the whole series of examinations covers about eight years

In ORGAN MUSIC, there are also five grades Grades I and II include exercises scales, sight-reading questions, ear tests, and two prescribed pieces In the higher grades the same series of tests are applied with more difficult studies

In SINGING, special importance is attached to the primary test and the report thereon In the five grades the subjects are sustained notes, scales and *arpeggios* to be vocalized, studies, two songs selected from a given list, sight-reading, questions, and ear tests The list of songs covers the whole range of voices from soprano to bass

Examinations of a similar nature are held for VIOLIN, VIOLA, VIOLONCELLO, and HARP

Specially for teachers, there are examinations in class-singing

The CLASS SINGING EXAMINATION includes tests in breathing rhythm, scale and *arpeggio* singing unison and part singing (accompanied or unaccompanied), sight-reading, and ear tests It is divided into two divisions—Junior and Senior

The EXAMINATION FOR TEACHERS is open to persons of 21 years of age who have passed a university matriculation or equivalent examination and a fee of five guineas is charged The tests are of three kinds Practical tests theoretical tests, and tests in the art of teaching These examinations are held in London in June or July For each examination a full syllabus is issued by the Society

Certificates and Awards In each grade three classes of certificates are awarded Honours (85 per cent marks) Pass with Distinction (75 per cent) and Pass (65 per cent) Centres for the local examinations are arranged at convenient times and dates to suit the needs of schools and candidates, and the examinations are held in the summer (June and July) and in the winter (November and December) Prizes in the form of handsomely bound books are awarded to candidates whose work is of exceptional merit Local theoretical examinations are held in March They are arranged in seven grades, and the questions (arranged in such a way as to provide a complete preparation) are published in six books Papers set in previous years may also be obtained

MUSICIANS, THE SOCIETY OF WOMEN—This society has as its main objects the provision of a centre where women musicians may meet, the giving of advice to members, the encouraging of serious composition among women Meetings are arranged between composers and executants Membership is open to women composers executants and writers on music

Classes for composers, for ensemble players and for teachers of singing are held, meetings take place monthly and occasionaly lectures are arranged A library of music and books on music is in course of formation Members may send in work to be considered by a sub-committee with a view to their performance

MUTISM—Mutism or dumbness is nearly always the result of deafness Speech is learnt by imitation, but to learn to speak well the lip movements must not only be seen, but the attempts to reproduce them must be corrected by the child's own sense of hearing Otherwise little progress can be made, for the child cannot correct his mistakes By constant repetition, the young child learns to attach meaning to what his mother or nurse says to him, but it is long before he attempts to reproduce what he is already familiar with As a rule by 15 or 18 months of age, he has ventured on his difficult task—the getting of a vocabulary—and, before he goes to school at say, 5 years of age, he has acquired and uses correctly a list of 400 or 500 words In the absence of the sense of hearing, this speech development does not take place, and dumbness is the result Hence the terms "deaf-mutism" and "deaf dumbness" In the case sketched here the deafness is congenital, and the deaf-mutism is called congenital But, even at 5 years of age, if deafness occur and if it be great, the vocabulary will be lost unless special educational methods be adopted and we have dumbness or mutism Hence the condition is called acquired deaf-mutism The degree of deafness which prevents the development of speech and, therefore, causes mutism or the degree of deafness which results in the loss of acquired speech, is not easily stated arithmetically but it may be conveniently called "Surdism"

Dumbness may result from other causes than deafness It may be due to an affection of the speech centre—Broca's convolution or lobe—a small cortical area on the side of the brain near its base, which is the motor centre of the muscles involved in the production of speech This is a fairly common cause of loss of speech in adults but it is rather rare in children Such mutism is called aphasia But mutism may be a part of idiocy or mental deficiency In this case hearing is present, and the motor centre for speech is not diseased but the centres which govern mental processes—probably situated in the frontal lobes of the brain—are not developed Speech not only requires a hearing centre a motor centre for the control of the muscles used in speech, but a sufficient intelligence to appreciate its meaning and to reproduce it Apart from these causes—deafness idiocy and aphasia—dumbness is rare Temporary dumbness may result from great excitement sudden shock, or mental depression Several cases have been recorded recently as having arisen from shell-shock or other incident during the stress of war Further, dumbness may occur from disease affecting the muscles of articulation but then other movements about the mouth and face are also involved, and not only speech but eating and drinking are disturbed by this defect Of course dumbness like deafness may be feigned J K L

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MYOPIA.—(See EYESIGHT OF SCHOOL CHILDREN, THE)

MYSTICISM AND EDUCATION—Mysticism as a term in religious philosophy, means the belief that the spirit or mind of man may, in certain circumstances come into direct and immediate relation with the spiritual world which lies behind phenomena Religion usually conceives of this spiritual world as the abode of the personal and self-conscious Being whom we call God The religious mystic believes that at least in some privileged moments he is admitted into the immediate presence of God There have, however, been some pantheistic mystics who do not think of God as a personal Being God for them, is rather the inner meaning and purpose of the world which we know by our senses, and the beatific vision is for them a clear apprehension by the mind's eye of what Plato called 'the eternal Ideas" or of the laws of nature in their ultimate significance and true inwardness Theosophy theurgy and magic—which in popular language, are often associated with mysticism and are even supposed to constitute its essence—are in reality, corrupt forms of it Despiritualized mysticism tends to fall into these aberrations, from which as experience has shown, this form of religion is insufficiently protected

Mysticism is not a view of reality which can possibly fill the whole of the mental life The pure mystic would not be a sane member of society, because he would reject all experience coming from outside, in the vain endeavour to lead the life of a

disembodied spirit while still on earth Mysticism, as a legitimate philosophy of life, is a conviction about the proper goal and crown of experience, viz, that the end and aim of life is the vision of God and that we are to prepare for this vision by a life of discipline and concentration of the mind on spiritual things A man may well be a mystic without ever having experienced trance or ecstasy It is enough that he should believe that all experience, in being what it is is the covering of some deeper truth which it half conceals and half reveals, and that the life of love and duty will gradually initiate him into the higher mysteries

Mysticism and the Child Such a view of life may at first sight seem to have but little bearing on educational problems The fanciful theory of Wordsworth that the infant is born with spiritual intuitions or reminiscences of the heavenly state in which he existed before his birth seems in spite of its beauty and attractiveness, to have but little basis in fact The little child will believe readily what his parents tell him about God and heaven The simplicity and matter-of-factness of his thought prevent him from feeling any difficulty about the reality of the Unseen He has to believe so much that he has not seen The directness of his questions about religion when he asks them both charms and embarrasses his elders If they show pleasure he will innocently repeat his inquiries and will even feign to have seen angels or heard voices But real mystical experience during childhood is probably very rare It is a great mistake to make a child superstitious Fairy tales told as such do no harm but no child should be taught to believe in ghosts or to think that certain actions are lucky or unlucky These notions only foster unworthy ideas about God and about the laws by which the world is governed

But children should be taught early to say their prayers and prayer is the mystical act *par excellence* In prayer we have reason to believe that we do ascend in heart and mind to God, and that He makes His presence felt by us The child should be taught to believe that 'God sees me, God is everywhere God loves me" It is also right that he should be taught, in very general terms that the dead "have gone away to be with Christ" Little as we know about the state of the departed this much, I think, we may safely teach our children

At the period of adolescence, which sets in rather earlier for girls than boys, the character changes rapidly, and in some cases there is a time of emotional disturbance It is during the years which precede and follow physical maturity that "sudden conversions"—which of course, are mystical phenomena—take place most frequently Such experiences however, are not really very common, and they occur as a rule, chiefly in those religious communities where young people are taught to expect them Further they become much more frequent in times of religious enthusiasm, such as the early days of the Wesleyan movement It is certain that external suggestion has much to do with stimulating the experience of conversion Suggestions of this kind ought to be made very cautiously if at all During adolescence anything which may cause a temporary loss of mental balance is to be deprecated It is not natural or wholesome for young persons to fall into an agony of grief over their sins, or to be uplifted by the consciousness of exceptional spiritual favours In many religious bodies, the young are taught to expect a deepening of the spiritual life through the Sacraments and rites of the Church This is probably more wholesome than the doctrine of sudden conversion

There is a special mystical temperament, which shows itself sometimes in a remarkable power of visualizing ideas and sometimes in a great aptitude for prayer and meditation If young people show these tendencies they should be warned that such "spiritual gifts" are by no means necessarily tokens of superior moral worth, and that if they are suddenly withdrawn that is no sign that the divine favour has been forfeited Mystical literature shows clearly that a vivid sense of God's presence often appears early in the devout life, to be followed by a season of 'dryness" Moreover, many of the finest characters, so far as we can judge never have any acute emotional experiences at all It is useful to remind the young sometimes that the Twelve Apostles do not seem (from what is said of them in the Gospels) to have been what is called religiously gifted persons but rather average men with a capacity for loyal self devotion

Religious sensibility is probably at its maximum in the time of early maturity The imaginative faculties tend to stiffen after middle age many poets have lamented the loss of the poetic vision which inspired them in youth But habits of prayer and meditation once acquired are lifelong possessions, and the mellow wisdom and steady conviction of later life may more than compensate for loss of the vivid freshness of youthful spiritual intuition

(See also BIBLE IN LITERATURE TEACHING, THE)

W R I

MYTHOLOGICAL STORIES AND MYTHS.—A myth is a story of gods or heroes and mythology is the scientific study of myths The Greeks, one of the first of the Western Aryan races, possessed a highly developed mythology, and from a very early period made a study of myths in order to discover the hidden meaning that might be behind them, and the reason why such stories were told about the gods For many centuries the myth was looked upon as an allegory combining religion with history or as an allegorical description of historical facts Recent study has however led to the belief that myths are the popular expression of the religious feeling in the lower ranks of society in a nation, and that they have been successively related by one generation to another, being modified and re shaped to suit the changing modes of thought in varying ages Modern research in regard to myths owes much to Professor Max Müller, who published his *Comparative Mythology* in 1856 His aim was to trace myths back to Aryan times, to discover their original meanings, and to trace the subsequent changes in their meanings The earliest myths appear to have been the result of the attempts of primitive people to account for the phenomena of Nature in their imperfect and undeveloped language The myth became a simile, or comparison of natural objects with living things, and the primitive Aryan came to believe that all Nature was endowed with life The Vedas of the Hindus are the oldest records of the Aryan race (about 1000 B C) and indicate a religion consisting mainly of worship of the powers and phenomena of Nature, the favourite deity, Indra, being the god of the firmament and also of rain and battle Indra contended with the demon of drought, and by his victory loosed the rains and streams He was the

son of heaven and earth, as was Chronos (Old Father Time) in Greek mythology Similarly, Agni, the god of the sun (Apollo of the Greeks), was begotten by the sky the clouds and the dawn and, as god of fire also resembles the Roman Vulcan and the Greek Hephaistus Our knowledge of Norse mythology is derived partly from the songs of the Norse bards, but the chief source is the Eddas The Elder or Poetic Edda dates probably from A D 900 and is a collection of thirty-five songs dealing with gods or heroes In these songs, the doings of Odin, Thor, and other hero-gods are told together with accounts of the creation of the world and the coming of the gods, and predictions of their end The younger or Prose Edda composed by Snorri Sturlason (1178–1241), contains many myths, borrowed from the old poems, of Loki Thor, and other gods Many, too, of the mythical and heroic songs from the tenth century are still extant

N

NAGEL'S TEST (for colour blindness) —This consists of sets of cards providing a quick and effective test for defects of the eye in discriminating colours Each card contains a circle on the circumference of which is printed a series of coloured dots at equal distances apart and of equal sizes The colours selected for the dots are those that are especially liable to be confused The cards are spread out in front of the person whose eyes are to be tested and he is required to select all cards with any dots of a given colour and then all those with dots of that colour only Tests for red green and grey in succession may be made in a few minutes and the nature of the defect if any quickly determined This test is largely employed, and is particularly valuable in the case of men who are employed in work that involves the observation of coloured signals, such as on railways or in the Navy

NANCY, THE UNIVERSITY OF —In 1572 a university was established under a Papal Bull, at Pont à Mousson in Lorraine and the faculties of theology and art were organized under Jesuit teachers The majority of the students entered for theology and the university enjoyed a period of success until the outbreak of the Seven Years' War At Nancy the Chapter of St George which had charge of the archives of Lorraine also had the supreme direction of education In 1612 Henry II approved the plan proposed by the city of founding a college under the management of the Jesuits This college was opened in 1616 and to it the University of Pont à Mousson was united in 1768, when Louis XV by letters patent confirmed the college and added to it the property of that of St Nicolas belonging to the same religious body For some time the various faculties were scattered over the city but in 1770 the city gave up a part of the Square de Grève where a vast structure was erected comprising three *corps de logis* not completely finished till 1788 though the professors were installed in 1778 To support the University the city paid a subsidy of 4 000 francs yearly for ten years The University was suppressed in 1793 and not restored until 1854 when it was re-established with faculties of literature and science A school of medicine established in 1822 was added to the University with a faculty in 1870 The faculty of law was formed in 1864 There is an influential branch of the Comté de Patronage des Étudiants Étrangers at Nancy doing much for the benefit of foreign students

NAPIER (or NEPER), JOHN (1550–1617) — Laird of Merchiston born at Merchiston Castle, near Edinburgh He was educated at St Andrews, and succeeded his father in the possession of the family estates in 1608 As a landlord he gave great attention to agriculture experimenting in the uses of natural and chemical manures He invented an hydraulic screw and revolving axle for preventing the flooding of mines His leisure was chiefly devoted to mathematical study and his fame rests permanently on his discoveries His earliest investigations in algebra and arithmetic included the subject of imaginary roots and methods of extracting roots of all degrees In 1594 he had discovered the general principle of logarithms and from that date he spent twenty years developing his theory perfecting the method of construction, and compiling the table itself While thus engaged, he invented the present method of representing decimals His description of the table written after he had invented the name "logarithm" was published in 1614 with a dedication to Prince Charles and entitled *Mirifici Logarithmorum Canonis Descriptio*

NAPIER'S RODS (or NAPIER'S BONES).— Instruments in a scheme of multiplication and division described in a work published by Napier (*q v*) in 1617 Each rod contained the multiples of one of the first nine numbers arranged from 1 downwards and by putting two or more rods together side by side multiples of such numbers as 76 or 329 could be seen at a glance

NARCOTICS AND EDUCATION.—Narcotics (Greek *narkotikos* making numb) are substances that in small quantities produce lessened sensibility to pain, in larger doses induce stuporous unconsciousness (often miscalled sleep), and in still larger quantities result in coma and death Anodynes sedatives hypnotics and anaesthetics are all narcotics in various degrees

Narcotics in skilled use, and for the relief of physical suffering or the pain of operations, are amongst mankind's greatest blessings, but used ignorantly to obtain sensual pleasure or to avoid discomfort they become one of the greatest scourges with which humanity afflicts itself

Narcotics have been divided by Overton into (1) the basic (*e g* morphine) specially entering into combination with the proteid elements of the nerve cell and (2) indifferent (*e g* chloral and

sulphonal) which enter into combination with the fatty constituents

The "morphine" type tend to check all the secretions, thus causing dyspepsia, constipation, emaciation depression of spirits, and sleeplessness

The "chloral and sulphonal" type act by depressing the vital nerve centres thus slowing and weakening respiration, lowering blood pressure, weakening vascular control, and reducing the bodily temperature They produce loss of appetite dyspepsia, defective excretion, especially that of the kidneys, and deterioration of the blood corpuscles resulting at times in "porphyrinuria" The chloral type produces much the more serious nervous and mental disturbances of health a single ordinary dose of sulphonal having caused death

A craving or habit is produced by narcotics when used continuously which when uncontrollable, is termed narcomania Alcoholism (dipsomania) is the cause of much insanity and nervous disease but every narcotic has its victims Many cases of slight nervous breakdown with sleeplessness by the injudicious use of these drugs have been converted into serious mental disorder In infancy and early childhood brain development is seriously affected by narcotics used to allay sleeplessness etc

Tobacco is the principal narcotic to be considered in relation to education

A report on tobacco smoking published by the *Lancet* in 1912 dwells on the fact that the *Dubec* tobacco (smoked by the Latin races Orientals Germans Boers etc) is much less injurious than the *Virginian* type so largely used in England especially in the form of cheap cigarettes The nicotine in tobacco smoke this report points out, varies with the amount in the tobacco used but there is a much larger amount in pipe than in cigarette smoke Cigarette smoke however, contains much more furfural of which the pipe smoke yields only a trace and which is absent in that of cigars and of Turkish or Egyptian cigarettes

Furfural is an aldehyde fifty times more poisonous than alcohol and there are probably other allied aldehydes in tobacco smoke, besides carbon monoxide, another seriously toxic agent

The immediate effects of smoking are to produce an unhealthy condition of the mouth and throat The more remote results are palpitation and smoker s heart affections of the eyes (*amaurosis*) disordered sleep and the exaggeration of any nervous instability Robust persons may smoke to excess with apparent impunity but most have to reduce the habit with advancing age

The mental effect has been the subject of much debate The two main claims in support of the usefulness of tobacco are that it soothes jaded nerves and is a stimultant to mental work Jaded nerves may, however, be soothed by other and more healthful means and the testimony of Victor Hugo throws doubt on its value as a brain stimulant He gave up smoking because under its influence "thought degenerated into reverie" In the analogous case of alcohol it is a matter of common observation that, although thought may appear brilliant to the individual to the observer it is much the reverse Although in tobacco smoking the narcotic effects are not so obvious, there can be little doubt that they are similar

The stimulant action on the brain as Sir Lauder Brunton points out, is due mainly to the effects of the smoke on the nerves of the mucous membrane of the mouth. This may help the reproduction of previous thought or acquired knowledge, but will almost certainly fail to overcome the narcotic influence on the higher brain centres in their power of originating new thought of the best character or in the registration of new memories The student who under the influence of tobacco believes that he has committed many facts to memory will often find these memories incomplete

Tobacco smoking, especially in the cigarette form, should be avoided by youths Its use by tutors, apart from the question of example, is of more than doubtful value for all, and a certain disadvantage to many H RAYNER

NATAL, EDUCATION IN.—(See SOUTH AFRICA, THE EDUCATIONAL SYSTEM OF)

NATIONAL ART TRAINING SCHOOL, SOUTH KENSINGTON—The origin of this school was a School of Design and Central School of Art established at Somerset House London, and removed in 1853 to Marlborough House as the National Training School of Art It was transferred to South Kensington in 1857 It provides for the training of teachers of art art workers and designers (of both sexes) A system of scholarships was instituted in 1863 and in addition maintenance allowances are in some cases provided Admission is obtained by passing an examination test The school of instruction for general students serves as a practising school for the teachers in training The course of instruction includes the following branches Linear drawing freehand outlines from the flat, freehand outlines from the round shading from flat copies shading from the round, the human figure and animal forms anatomical drawing, drawing of natural objects painting from flat copies, painting from casts painting of natural objects, landscape painting painting the human figure and animals, modelling ornament, modelling natural objects, clay modelling elementary design applied design Candidates who pass the necessary examinations are granted third grade art certificates or art class teacher's certificates

NATIONAL ASSOCIATION OF HEAD TEACHERS—This Association was formed, in 1897, at a meeting at Nottingham of representatives of similar associations already existing in London and other large towns which had been called into being by the numerical preponderance of the class teachers in the N U T, and the difficulty of discussing there the specific duties of head teachers The founding of a National Federation followed as a natural consequence, the Chairman at the inaugural meeting asserting that there was need of closer union among head teachers, that without federation the associations were isolated forces, each expending its energy within its own particular sphere, and that the influence and importance which now attached locally to the associations ought to merge into a wider influence and importance which should be of national moment It was distinctly laid down, and this has not been departed from, that the members were proud to belong to the N U T, and that there was no antagonism to that body, the action taken would tend to preserve the balance of the machine, which was in danger of being lost through the large numbers of class teachers, and so would help Union work

Organization. Those eligible for membership are

head teachers in schools primary and secondary, provided and non-provided At the end of the first year the membership numbered 1 462 of whom 1,000 were London teachers, there are now 7,000 members and the signs are that this progress will be maintained The N A H T is working side by side with the N F C T and the N U T in educational matters and is allied with other bodies, notably the Workers' Educational Association and the National Association of Local Government Officers, having representation on their councils, and in addition two representatives on the Teachers Registration Council

Aims and Methods The first duty of each Association is to help its members to carry on their specific work with the greatest efficiency by providing a means whereby the strong may assist the weak and the experience of each be available to all In order to carry out these duties thoroughly the pre eminence and independence of the head teacher are necessary, anything tending to destroy these aims at the vital welfare of the school and destroys the initiative and virility of thought which must be in every well-conducted school By giving opportunities to its members to take counsel together a Head Teachers' Association helps them to protect themselves against undue interference in the carrying out of their duty, either from officials of the Local Education Authority or from those of the Board of Education The N A H T declares that in the carrying out of official duties its members are responsible only to local and Imperial education authorities and in doing this it sets up a standard of professional etiquette in the interests of the children While encouraging head teachers to act in every just way as colleagues with the class teachers under them the N A H T repels the visionary idea that the control of a school may be as in a republic, that the head teacher is not necessary, that his functions are ornamental and asserts that a head teacher working in harmony and loyalty with his staff is the source of the life and well being of the school

The N A H T sets due value on the services of its members and is striving in conjunction with the N U T and the N F C T to bring about a material improvement in the payments made to teachers believing that the responsibilities attached to the office require that the best men and women should be attracted into the profession by the prospect of a reasonably adequate salary

In the forefront of its work and considered of the very first importance is the educational policy of the Association

1 As regards Education generally—

(*a*) The provision everywhere of a sufficient, efficient and suitable system of Secondary schools

(*b*) A natural system of Secondary Education under the same local authority as the Primary system

(*c*) Compulsory attendance at Continuation schools

(*d*) Resistance to any re-introduction of the system of individual examination

(*e*) A more rigid application of the by-laws relating to compulsory attendance

(*f*) Compulsory practical training for scholars of both sexes

(*g*) Removal of all limitations of age and curriculum in the education provided for scholars in the upper classes of elementary schools

(*h*) Increased grants from the Central Exchequer

2 As regards the Child—

(*a*) That poverty should be no bar to the passage of a child from the Primary to the Secondary school or to places of higher education

(*b*) The abolition of street trading by children

(*c*) The abolition of the half-time system

(*d*) The raising of the age of exemption to 14 years

(*e*) The establishment of school clinics

3 As regards the Profession—

(*a*) That at least a year's practical teaching should precede entry to the Training College

(*b*) That no teacher be responsible for a class above forty

(*c*) Only fully qualified teachers to count on the effective staff of the school

(*d*) Freedom of passage from service in one class of school to that in another

(*e*) Head teachers not to count on the staff, except in very small schools

(*f*) Greater freedom for the Head Teacher in the control and management of his school

(*g*) Freedom of the Head Teacher to delegate to assistants the necessary powers for the maintenance of discipline

(*h*) The Head Teacher to have a voice in the appointment of assistants

(*i*) Adequate salaries for all Head Teachers Salaries to be the same for teachers in provided and non-provided schools under the same authority

(*j*) The raising of infant mistresses' salaries to the level of those of girls' mistresses

(*k*) The representation of head teachers of all grades of schools on Education Committees and all other bodies dealing with educational work

(*l*) That experienced teachers only be appointed to the Inspectorate a proportion coming from Primary schools

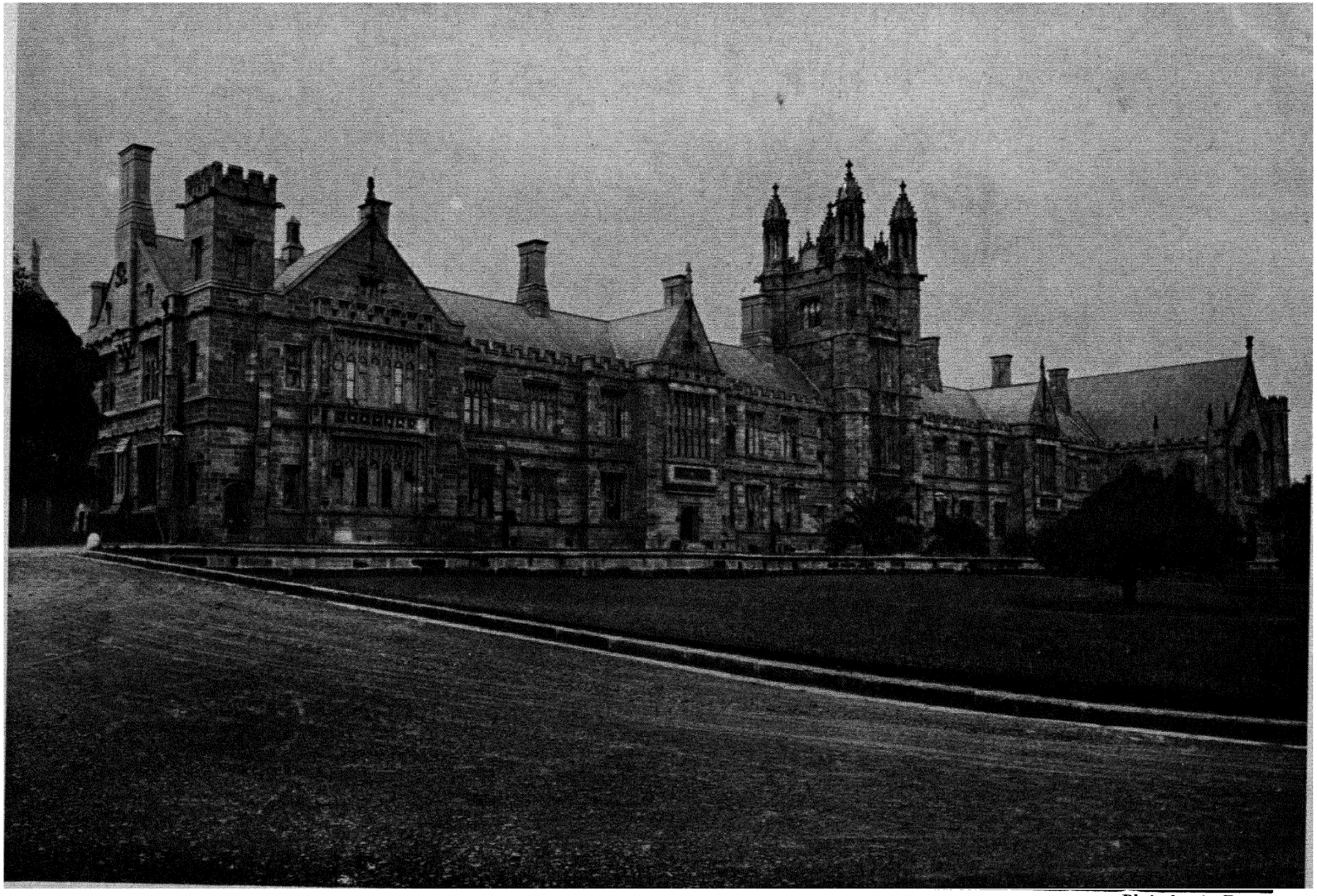
(*m*) Superannuation on a *pro ratâ* basis by means of local schemes, complementary to the Government scheme

(*n*) Compensation for dispossessed teachers

By means of its Annual Conference the National Association brings the decisions of head teachers into focus, and aims at helping to form national opinion in matters educational by spreading these far and wide The practice of one district is compared with that of another, a flow of ideas takes place from Association to Association, and in every way the central body supplies the chain which binds link to link and strengthens the whole J E D

NATIONAL EDUCATION ASSOCIATION, THE —This came naturally into being through dissatisfaction with the Report of the Cross Commission Not only did voluntary schools seem assured of indefinitely long life but the recommendation for their assistance out of local rates would on the one hand, put them on terms reasonably level with their competitors, and, on the other hand, might be expected to cause a reaction against public elementary schooling generally because of its increased cost voluntary subscriptions would be displaced by local rates, and the annual 'precept" of the School Board would be greatly exceeded

The Association was formed at the beginning of 1889 and had for its main object the promotion of a system of national education which shall be in all its grades efficient progressive and unsectarian and shall be under popular control" In its activities it would "oppose all legislative and administrative proposals having a contrary tendency" and secure (*a*) the universal establishment



Sydney University

Photo by A Foster

PLATE LXV

debates on the details of the Act of 1870 In its own way and on its own side it was as active and effective as the League

The Act itself failed to satisfy either the League or the Union The League aimed to get much more than the Act gave and was disappointed And yet on the face value of the clauses of the programme of the League it had apparently been highly successful But it would seem that the broad result of the Act suggested that voluntary schools might live side by side with the Board schools and with fairly easy finances And it was just this broad result that prevented the Union from recognizing a defeat On the whole it might claim a drawn battle with hope for the future A E L

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NATIONAL FEDERATION OF CLASS TEACHERS, THE—To appreciate the *raison d'être* of this organization it is necessary to pay some attention to the early development of our national system of popular education Immediately after the passing of the 1870 Education Act the supply of teachers fell short of the demand created by the provision of schools Every certificated teacher was required to take charge of a school and his staff consisted of pupil teachers and pupil teachers only In course of time he found himself in possession of ex pupil teachers who had completed their apprenticeship and were willing to remain with him for a year or two until their entrance into a training college or certification as acting teachers

By 1880, the country had largely overtaken its need of new schools and the newly certificated teachers no longer found schools awaiting them They then took service as certificated class teachers and waited one two or three years for promotion to head teacherships They expected that their service as class teachers would be of short duration and they were thus content to accept conditions of service status and remuneration quite incompatible with their qualifications Unfortunately the term of waiting for promotion rapidly lengthened but the conditions of service status and remuneration remained unchanged Thus in the year 1890 there were nearly 20 000 class teachers receiving an average salary of £91 6s (men) and £67 4s (women) They had all been induced to enter the profession by the prospects of head teacherships with reasonable remuneration and they found themselves compelled to serve for long periods in posts which offered but the most meagre emoluments Besides this their conditions of service generally were far from pleasant They were treated by school boards and managing committees as if they were the pupil teachers with whom the schools had been previously staffed They were deprived of the right of individual method in teaching, they were mere grant earning machines being dismissed at a month's notice if they failed to achieve a high percentage of passes at the annual examination and they were denied the disciplinary use of corporal punishment The building of huge barrack schools robbed them of reasonable hopes of promotion and at length there came the inevitable rumbling of discontent Class teacher associations sprang up in large towns and cities and local efforts were made to improve the unsatisfactory conditions Inquiries from town to town as to methods of work led to informal conferences at Sheffield and Nottingham in January and October 1892 The discussions and debates showed a widespread opinion in favour of a national federation of class teachers' associations but there was also a very strong element opposed to such a federation which they declared would prove antagonistic and weakening to the already powerful National Union of Teachers The federationists declared that they desired to work through the N U T and argued that the proposed federation would prove a stimulus instead of a hindrance to the "parent body For twelve months the matter was vigorously debated in the columns of *The Schoolmaster* and in the local associations until at a conference at Derby in October 1893 the Federation was established by an overwhelming vote

Aims and Achievements The report to the following Conference held at Birmingham in October 1894 showed that thirty associations had become affiliated with an aggregate membership of 3 233 That the new body was in no way antagonistic to the N U T was at once made evident in its rules Rule 2 declared that "the objects of the Federation are (*a*) To induce all Assistant Teachers to join the N U T (*b*) to obtain for Assistant Teachers fair remuneration for their services freedom from vexatious and harassing regulations and a proper professional position mainly through the instrumentality of the N U T (*c*) to secure the adequate representation of Assistant Teachers on the Executive of the N U T (*d*) to provide ready means of ascertaining the opinions of the federated Assistant Teachers of formulating their demands and promulgating their decisions by holding a Conference at least once a year and Rule 3 declared that 'an Association eligible for federation shall consist of Assistant Teachers, 25 per cent of whom shall be members of the N U T

The Federation has grown steadily and consists now of 160 associations with an aggregate membership of 24 000 That its main objects have been reasonably achieved is evident from the following facts—

1 There are at least 60 000 class teacher members of the N U T

2 Salaries of both class masters and class mistresses have been increased by over 40 per cent

3 One hundred and thirty nine authorities have granted to their class teachers the right to inflict corporal punishment for disciplinary purposes

4 One hundred and eighteen other authorities do not veto this right

5 Only sixty six authorities still retain prohibitive regulations some of these referring to the punishment of girls only

6 Class masters are to be found to-day in Parliament and in many local administrative bodies

7 The Federation has initiated many real educational reforms

8 There are fourteen class teacher members of the N U T Executive

9 Six class masters and one class mistress have attained the presidency of the N U T

Publications The Federation has its own official organ a bright little bi-monthly entitled *The Class Teacher* Contributions to its pages are all voluntary, but they are of high literary merit, and many have been the earliest expression of new educational policy of real importance

The *Annual Handbook* published by the Federation is a useful compendium, giving not merely the facts concerning Federation effort, but statistics

and information with regard to the whole educational position in England and Wales It is a unique production whether regarded from the point of view of the accuracy of its facts, their up-to-date character or their clear presentation It is particularly valuable as an exposure of conditions which the Federation regards as uneducational

Special Efforts and their Results. The most persistent efforts of the Federation have been, of necessity directed towards the improvement of salaries The low remuneration combined with the growing permanency of the position has greatly militated against the attractiveness of the teaching profession yet the ordinary law of "supply and demand' has not been allowed to have its full effect upon the salaries In every time of dearth the difficulty has been met not by increasing the pay of the class teacher and thus rendering the profession more attractive but by introducing more unqualified teachers into the schools at a cheaper rate In spite of this, the Federation has succeeded in its efforts Its plan was to arrange education authorities in order of the amount paid to class teachers on a forty five years basis and to encourage young teachers to seek appointments under those authorities where the remuneration is highest The resistance to the formulation of salary scales was largely overcome, and there were at last only five or six authorities of comparative unimportance which had not acceded to the request of the Federation to grant yearly increments of an automatic character except in cases of incompetence or idleness This steady achievement paved the way for a scheme of a more rational and national character The National Union of Teachers was induced to adopt the Federation scale of salaries for class teachers and by means of promotional increments and definite additions to the maximum to make this the basis of the payment of head teachers salaries This plan has now been adopted by the Burnham Committee and has made it possible to secure an orderly and progressive solution of the chaotic problem with which the Federation was confronted at its establishment in 1903

The campaign of the Federation against "barrack schools' and against the consequent diminution of prospects of promotion has been similarly successful for the Board of Education now declines to sanction buildings to accommodate more than 550 children while many authorities now divide their largest schools into two or more departments whenever a change in head teachership renders such a course possible

Perhaps the most remarkable achievement of the Federation has been the reduction of classes from ridiculous numbers like 80 90 and even 100 children to a maximum of 60 on the roll This reform was obtained as the result of a long and carefully planned agitation which was commenced by a public debate in conference, carried into the trades unions and industrial societies of the country and then when the question was ripe for Parliamentary action, referred in its final stages to the N U T The present maximum of 60 is still regarded as far too high, and the Federation is earnestly striving for a further reduction to 40 on the roll Throughout the campaign, it was urged by the Federation that the reform was sought not in order to reduce the work of the teacher, but to benefit the children by making the teacher s work more effective

The affairs of the Federation are managed by a Council consisting of President, Vice-President, ex-President, Treasurer, Secretary, and eleven other members representative of the districts as laid down in the Rules of the National Union of Teachers This plan enables the Federation to take a prominent part in the election of the N U T Executive The affiliation fee is 1s per head of the membership of each Association

The present Hon Secretary of the Federation is Mr J H Lumby, B A, 14 Bayfield Road, Grassendale, Liverpool W B S

NATIONAL HOME READING UNION, THE.—This was founded by the late Rev J B Paton, D D in 1889 and is established at 12 York Buildings Adelphi London, W C 2 The Union exists for the purpose of guiding readers in the choice and use of books and of providing a means of continuous education

It provides (1) Courses of reading with select lists of books, (2) a monthly magazine during the session from October to May, containing articles on the selected books and their authors questions on the books and information of interest to readers, (3) companionship in systematic reading and study in circles (4) tutorial help by correspondence, (5) the loan of illustrative portfolios of prints and photographs, (6) the supply of information, counsel, and help towards the promotion of these and kindred objects

Membership is divided into four sections—

1 Special Course This section comprises courses upon a variety of subjects in various departments of literature and members are entitled to the book list monthly magazine two current courses in pamphlet form and two supplementary courses The supplementary courses include series of useful articles taken from past special courses

2 General Course, suitable for those who prefer to read a larger number of subjects in place of detailed study

3 Introductory Course includes book list, four monthly magazines to cover four subjects selected from the General Course This is suitable for those who have not had much opportunity of sustained reading of good literature

4 Young People s Course, suitable for boys and girls up to about 17 years of age, especially in day or evening schools Sunday schools, and continuation classes A portion of the magazine is devoted to this section and special arrangements have been made to assist teachers in forming reading circles to meet the needs of these young people

Reading Circles are a special feature of the Union s operations A group of not less than five persons may form a reading circle in order to read the books at home and then to meet periodically to discuss them Reading circles may arise out of a very large number of associations of friends in the home, the church the club, the co-operative society, etc The prospectus issued by the Union gives useful suggestions to help those who wish to form circles, and for the guidance of circle leaders or secretaries

SCHOOL READING CIRCLES To encourage the formation of reading circles in schools, the N H R U has made a special arrangement by which circles may be formed in the Young People's section on payment of one fee by the teacher The teacher receives the book list and the magazine, which is

used by the pupils The N H R U , with the assistance of inspectors and teachers who have had experience in the conduct of reading circles in schools, carefully draws up a suitable book list year by year, and marks the books suitable for the needs of the young readers There are upwards of a thousand such reading circles at work in London and many more in the provinces Local education authorities are authorized to pay membership fees of teachers who wish to form their reading classes into reading circles affiliated to the Union and the Board of Education (Circular 533 9th June 1905) urged the co-operation of local education authorities with the N H R U

Correspondence Circles are arranged for members who do not desire or who are unable to join a reading circle Communications between members and their leader are in this case carried on by correspondence

Certificates are awarded to members of the Young People's section who read not less than two books during the session and to any member who gains four consecutive yearly certificates is awarded a special certificate signed by the president of the Union

Affiliated to the N H R U is the Co-operative Holidays Association which exists for the purpose of establishing holiday homes in picturesque and interesting situations both in Great Britain and on the Continent Some of the Union s courses are incorporated in the Association s magazine *Comradeship* and members of the Association in this way become connected with the Union The home reading magazine and the book lists may be obtained by non-members (See also PATON JOHN BROWN)

NATIONAL INDIAN ASSOCIATION, THE — (See INDIAN STUDENTS IN ENGLAND, THE EDUCATION OF)

NATIONAL SOCIETY, THE —The National Society for Promoting the Education of the Poor in the Principles of the Established Church was founded in 1811 and incorporated by royal charter in 1817 Its primary object was a religious one but it promoted secular instruction and its foundation began an era in the history of popular education in England Dr Bell, who had previously introduced his monitorial system in Madras was engaged to assist the Society in establishing schools to be conducted on the mutual instruction system The Society's first work was to establish a central school in Holborn for training teachers as well as for instructing children It encouraged the formation of societies to be affiliated to itself in all parts of the country Schools grew rapidly and by 1833 over a million children were under instruction In 1835 the Society received its first grant from the Government towards the erection of normal schools and shortly afterwards established St Mark's College, Chelsea, while in 1844 it took over the Battersea Training College Inspection and education grants began in 1839 Before 1870 thirteen training colleges for masters and seventeen for mistresses had been established

The Act of 1870 forbade H M inspectors to examine elementary schools in religious knowledge and the Society began to appoint diocesan inspectors for its schools This Act caused a great increase in the number of schools in which definite early Church teaching was provided, and in 1880 the Society's schools were educating 2,300,000 children

For many years the Society's house and publishing office for its books was situated in Broad Sanctuary, Westminster, but is now in St Peter s Street, close by

The Society from the first published various kinds of text-books suitable for its schools and in later years a weekly paper known as the *School Guardian*

NATIONAL UNION OF TEACHERS, THE.— The National Union of Teachers (often referred to as the N U T) is an organization of persons professionally engaged in public education It mainly consists of teachers who are certificated by the Board of Education as qualified for service in public elementary schools and therefore the name used to be the National Union of Elementary Teachers but the scope of membership has become less distinctive and many teachers in continuative technical and secondary schools teachers of special subjects and tutors lecturers and professors are now included The present rules provide that persons are eligible for membership if wholly or mainly occupied in teaching and also coming within one or other of the following categories—

1 Teachers on the staffs of public elementary, higher elementary central, special poor law industrial or Army and Navy schools who (*a*) hold the certificate of the Board of Education, or (*b*) have the status of certificated teachers, or (*c*) are recognized by the Board of Education as uncertificated teachers or (*d*) are teachers of special subjects who are employed by a school authority and hold a diploma recognized by the Board of Education these include teachers of cookery laundry, domestic subjects handicraft, and teachers of art

2 Teachers on the staffs of universities, university colleges, training colleges secondary schools day technical institutions, pupil teacher centres, and art schools who possess professional qualifications equivalent to those required for admission under (1)

The Union is neither a chartered professional institute nor a trade union though it combines certain features of the one and of the other it has functions and an organization peculiarly its own Aiming to deal with every aspect and grade of public education it claims that it enters into relations with every education committee—national or local statutory or voluntary great or small and has become a recognized medium of communication between teachers and Ministers for Education, the Board of Education, local education authorities, educational associations, Royal Commissions on Education Parliament and the Press It also aims to deal with every phase of a teacher's professional life by conferences and meetings it affords its members opportunities for professional counsel and for experience in the conduct of public affairs it supports its members individually with advice in educational and professional matters, assists them when in difficulties with school authorities, supplies a representative on their behalf at any enquiry held by the Board of Education, local education authority, or school managers, renders them help at law if prosecuted, libelled, or otherwise damnified wrongfully in their professional capacity, takes protective or mediative steps for them when unjustly dismissed or harassed, and financially sustains them when they incur loss by standing up for a teacher's professional rights It cares for individual members in other ways also as by establishing a provident

society for the purchase of annuities, sick pay, and life assurance, and by maintaining a Benevolent and Orphan Fund which owns two large orphan homes, grants temporary monetary relief medical aid, and annuities to infirm or aged teachers and widows of teachers as also by instituting and supporting an Examination Board, which issues certificates and diplomas *The Schoolmaster* now owned in trust for the Union has for about forty-eight years been its organ in the Press

The unit or cell of the Union is the local association to this a member pays an annual subscription, which includes the sum of 21s sent on to the Union proper in 1919, there were 566 such local associations topographically distributed over England and Wales These taken together form the Union, though there is also an intermediary link called the County Association, which unites local associations within a county area, and fifty-four county associations exist but they have little share in controlling the Union as a whole The annual conferences possess that control in the last resort and during the rest of the year it is exercised by an elected central council called the Executive In public sessions the Annual Conference deals with current educational matters, and in private sessions with the organization and business affairs of the Union The administrative work of the Union is carried on at meetings held twice a month of the Executive and its standing committees for education examinations finance Press and general purposes legal assistance, Parliamentary action and superannuation tenure of office, salaries and sustentation of members and Union organization Special committees are also appointed to deal with special subjects such as the Rural Schools Committee the Higher Education Committee and the Continuation Schools Committee Monthly meetings of the Central Council of the Union s Benevolent and Orphan Fund with its committees and weekly meetings of the General Board of Management of the Provident Society with its committees, are held Large sums of money have thus been administered for the benefit of members and of course the Union is not a commercial concern yet the accumulated funds of the Union the Benevolent and Orphan Fund and the Provident Society on 31st December 1918 amounted to as much as £1,388 052 Of this £157,128 was for general legal, and Parliamentary work and sustentation of members, £57 853 was for benevolent purposes and £1 173 071 was for Provident Society benefits These figures all refer to capital and do not of course, include the vast sums expended or paid out

In constitution the Union combines large freedom for its local branches, with central power and centrally administered policy Local associations recruit members collect subscriptions meet for professional discussions and social intercourse, adopt or consider proposals which are called ' Resolutions to Conference,' appoint representatives to Conference, and often advise or instruct them how to vote The officers and Executive of the Union are elected postally, by ballot-papers The specially-built offices of the Union, situate at Mabledon Place, W C 1, are large and well planned, under the same extensive roof are housed the Union proper and the three auxiliary institutions A large clerical staff is employed, and the various departments have skilled chief officials in charge of them, who act under the instructions of the various boards or committees and the guidance of a General Secretary who is responsible for the whole

History and Development. Beginning in 1870 with 400 members in 1885 the membership of the Union was 11,082, but in and after the year 1890 the numbers grew rapidly, by a yearly average of 3,315, and by the year 1919 the membership had reached to over 112 200 In most respects, though not in all, the numerical strength of the Union has been the index of its power and usefulness and therefore the development has been gradual Though the history of the Union has not yet been written, the following sketch will convey an impression of what the record should be

Prior to 1870 attempts had been made to organize elementary teachers as they were then universally called but with little success Associations of such teachers existed then in many districts, but in almost every case were connected with some religious body and supervised by local clergy or other ministers of religion (Even in 1874, the Dean of Rochester was the President of theRochester Association of Teachers, and the North Wales Association had the Bishop of Bangor as President) Also there was no central organization around which these local associations might gather for co-operating work They therefore possessed little influence or power, for instance, they could offer nothing but feeble opposition to what was called " the Revised Code " in 1861 or for ten years after that do anything to amend the unfortunate operations and results of that retrogressive State Paper

But when the national agitation which preceded the Education Act of 1870 made it plain that a Government Department, controlling and subsidizing all public elementary schools, would be set up the sporadically associated teachers saw the need of amalgamating in one body, with a centre in London as well as branches there and elsewhere A meeting took place in the theatre of King s College London representatives from about twenty six of the old local associations being present, and the " National Union of Elementary Teachers " was then formed In that name is seen the acceptance of two ideas first, that the members were to be drawn from among elementary school teachers only and, second, that something of a trade union organization—the title " National Union ' is usual in the Trade Union world—must be adopted If, in 1889, the word " Elementary " was dropped from the title, it was less because the Union was at that date proposing to admit other than elementary school teachers to membership than because the skilled, trained teachers in question felt that they were not in a mere rudimentary professional stage

Significant in the history of the Union has been a determined collective avoidance of religious disputes and differences, and a care not to identify, or seem to identify, the Union with any particular body of religious thought this policy was evident even from the beginning, when, the first President being a Churchman, the first Secretary appointed was not Bitter controversies have raged between the managing bodies of public elementary schools (denominational and non-denominational), but there has been little of that among the teachers, and at all times the leaders of the Union have set examples of collective avoidance of polemical disputes, though holding their own views in such matters with personal integrity and independence. During the early years of the School Board system,

and indeed until the Education Acts of 1902 and 1903 removed the economic distinctions between Board schools and voluntary schools (to use the terms till then in vogue), there were slight collective manifestations of personal feeling in favour of one kind of school or the other from time to time, but these never more than momentarily disturbed the policy or the activity of the Union which has never consented to recognize as a unit of the Union an association of Board school teachers only, or of Church school teachers only, any more than of secondary or primary teachers only consistently it has stood for the principle that the teaching profession is or should be, one and indivisible A collective detachment from party political divisions has also been shown notably whenever the Union has endeavoured to promote the candidature of teachers or ex teachers for election to the House of Commons and when one party has ceased to be represented thus because of electoral happenings Yet this has not meant collective aloofness from political discussions as to religious teaching in schools for example, the Union has always stood for the continuance of religious teaching with (later) a preference for the Cowper Temple plan

These rather unusual characteristics detachment from party political disputes, and the subordination of theological prejudices to educational progress have enabled the influence of the Union to be used with the more effect when Bills before Parliament raised questions which divide Parties and Churches in its political activity (confined to the politics of education, so to speak, but continuous and strenuous), the things kept in mind have been the welfare of the schools, children and teachers Had this not been so, the Union could not have carried on political activities and exercised very considerable pressure upon central and local bodies for public education without more protest from outside than has been the case for often and powerfully it has used all legitimate political methods—candidatures of teachers for membership of Parliament speeches and votes there lobbyings and deputations while these have been reproduced on a smaller scale in connection with local education authorities (upon some of which teachers sit by election) and upon local education committees, to many of which representative teachers have been co optated One considerable result of influence such as this was seen in the Education Acts of 1902 and 1903 as to what has been called the co ordinated control and administration of elementary and secondary education by local authorities The Royal Commission on Secondary Education in England had reported in favour of a separate local authority for secondary education but a memorandum of dissent by one Royal Commissioner (who was General Secretary of the Union) put forward the idea of one and the same local authority for all forms of State or rate aided education in the same district More than one Government Education Bill embodying the separative principle was brought into Parliament but each was opposed by the Union and none succeeded so that the Act of 1902 almost necessarily had to embody the opposite principle the one for which the Union had contended so long The Union's action as to registration of teachers, in procuring the abandonment of the first register and helping to set up the one now in use is another example of the Union's persistency of policy and power As a rule, it has been wisely guided and efficiently led, compromises have frequently been adopted to avoid schisms or friction, and a considerable measure of success has been the result

The Work of the Union. In improving the professional social, and pecuniary position of the elementary school teacher as such, the Union has already been remarkably successful, and much has been done to help various sections of the teaching profession to co-operate and be friendly with each other But perhaps the chief achievements of the Union have taken place in the domain of elementary school reform

In the year 1901 the General Secretary of the Union contributed to a work, entitled *Efficiency and Empire*, a careful statement of the position of the Union towards educational reforms at that date He stated that the curriculum of the public elementary schools was only just then beginning to be placed upon "a reasonably satisfactory footing and pointed out that in the year 1889 the Union's programme of reform contained these items—

1 Abandonment of the annual examination of each scholar in each subject upon a fixed day as the official mode of testing the efficiency of the schools

2 Substitution of casual and unexpected visits by Government inspectors who would thus watch the work amidst its ordinary conditions

3 Abandonment of the rigid classing together of scholars according to age and to standards of annual examination last ' passed

4 Substitution of a natural and educational classifying by the teachers who knew the children irrespective of age or the (often accidental) results of set examinations

5 Abandonment of the practice of awarding State aid to a school according to the percentage of children in it who "passed the set examination

6 Abandonment of separate grants for separate subjects given according to the quantity rather than the quality and thoroughness of the work

7 In place of No 6 a ' block grant payable to a school which reached the standard of efficiency and not variable or hardly variable by increase to schools which exceed that standard because the circumstances of schools in slums or suburbs, hamlets or urban districts vary so much

8 The consequent detachment from teachers of sordid incitements to work for the mere purpose of earning variable grants

Only gradually had these reforms been gained (the statement went on) and the last of them in 1901 only so that "only from now onwards can the proper effect of a rational system of curriculum classifying of scholars and inspection of schools be expected to begin to appear ' It was further pointed out that "since 1862 when the system known as ' payment by results was instituted the associated elementary school teachers have been the only set of people in the country who have agitated and worked for these reforms which have not come about at the instigation of the universities or of a Government department or even of the great school boards Most of these and the Press were hostile to the change H M inspectors of schools even were most of them opposed to it and one of the tasks which the N U T had to accomplish before these reforms could be brought about was to bring the power of these inspectors within reasonable limits" These great changes now completely accomplished may be regarded as due, in the origin, to the Union as a constructive force

In claiming to be "the chief organized external

force which makes for improvements in the ideals, plans, and administration of public education " the Union prospectus of 1917 summarized the following as some of the many reforms great and small, due to the initiative and persistent advocacy of the Union ' in the past—

Education Acts and amendments to Education Acts and Factory Acts Appointment of Royal Commissions and Select Committees to consider questions of education Adoption of a co ordinated system of education—elementary, secondary and higher—under the control of publicly elected authorities The extension and liberalization of curricula The abolition of rigid and unnatural classifications of scholars by mere age and the establishment of flexible natural and educational classifications by attainments and capacities Improvements in the regulations concerning instruction in singing drawing physical exercises manual training domestic subjects and needlework Reduction of over pressure on younger scholars Establishment of healthier and more reasonable conditions of study in school Adoption of satisfactory schemes of medical inspection Improvements in the enforcement of school attendance Extensions in the school life of children Reductions in the ' half-time ' system Provision of facilities for the establishment of Juvenile Employment Bureaux Improvements in methods of inspection and examination Abolition of universal annual examinations of schools Abolition of the annual examination of each scholar A more educational graduation in curriculum Raising of the standards of proficiency required for the exemption of children from attendance at school Abolition of the principle of payment according to mechanical results Equalization of grants payable in respect of infants and of older scholars Reduction in size of classes improvements in standard of staffing Amendments in the organization and selection of the inspectorate Improvements in the qualifications of teachers Restriction of the employment of imperfectly qualified teachers Closer similarity of treatment of teachers in council and voluntary schools Amelioration in the curriculum and training of pupil-teachers bursars and student-teachers Extensions of facilities for the training of teachers Raising of the standard of proficiency required from candidates for the teacher s certificate Establishment of powers for the profession to create a Teachers Register New modelling of Codes of Regulations for schools of various types Amendment of rules mistakenly laid down by school boards local education committees and school managers Election or appointment of experts in teaching on local governing bodies

As to personal and professional benefits gained the prospectus mentioned among others, these—

Revival of pensions for the older teachers and extensions of amount for that purpose Establishment of a general scheme of superannuation for certificated teachers including disablement allowances State pensions and annuities, and of superannuation systems for secondary, technical and elementary school teachers in several large local areas Freedom for teachers to serve as members of local education committees Freedom from compulsory extraneous tasks Abolition of the declaration binding training college students to serve in a public elementary school Substitution of an undertaking to serve for a given period in any approved school Relief afforded by the reduction of excessive and unnecessary statistical returns Abolition of the inspector's power to endorse the teacher's certificate right of appeal against disastrous reports by inspectors, and against suspension or cancellation of diplomas Safety of the teacher's certificate, as comprehending all obligatory subjects Retention of the right of reasonable corporal punishment Appointment of certificated teachers as assistant inspectors Appointment of sub inspectors and other certificated teachers as inspectors Reduction of the number of scholars in charge of any one teacher General improvement in staffing

Ideals and Aims. The objects of the Union have had to be re-stated from time to time not because of changes in policy but because of achievements Gradually the Union has lived down or otherwise reduced the amount of public adverse criticism (often attack) which used to be heard from Ministers and officials at the Education Department and from teachers or bodies of teachers not associated with the Union as well as from the newspaper press Occasionally friction still arises between the Union and a local education authority as at West Ham and in Herefordshire and elsewhere where the Union withdrew many of its members from schools, adopting the methods of a " strike ' and it maintains a black list of schools local authorities and managers too and seldom neglects an opportunity for strong action Yet upon the whole the existence and action of the Union have come to be approved by most people who consider education and the daily work of teachers as of great importance to the nation and by those who wish to see a profession of teaching set up not less liberal and self governed than other learned professions are The future policy of the Union was set forth in some detail, in the statement of aims awaiting achievement " which appears in the objects of the Union as revised in 1915 but several of these (some of them the more important) have since then been achieved—

EDUCATIONALLY " The Union desires to secure such improvements in existing Educational Organization as shall lead to the firm establishment of a Complete System of National Education offering full possibilities in Day and Evening Schools, Colleges and Universities for the development of that mental and physical strength which, coupled with high character makes for perfect citizenship In working towards the achievement of this object, the Union seeks

1 Greater aid from the Imperial Exchequer in relief of local rates In distributing such further aid regard should be had to the needs of poor districts and small schools

" 2 With regard to School Attendance

" (*a*) Strict enforcement of the existing law

" (*b*) Compulsory attendance for all scholars to 14 years of age

" (*c*) Enforcement of attendance at Continuation Schools with consequent reduction in the hours of labour where necessary

" (*d*) The establishment throughout the country of Junior Employment Registries to give skilled advice to parents, managers, and teachers in the selection of suitable occupations for children between 14 and 18 years of age, and in the choice of such further course of instruction as will help in qualifying them for future skilled employment

" 3 Improvement in the Teaching Staff of Secondary and Elementary Schools by the employment of a larger number of duly qualified teachers and the gradual exclusion of unqualified persons All persons entering the Teaching Profession should

be required to furnish evidence of a liberal training, special knowledge of the science of education, and teaching capacity, for the acquirement of which suitable provision must be made in the course of training

"4 The elimination of large classes barrack schools and combined departments

"5 Larger freedom to Local Authorities in the establishment of various types of schools necessary to meet the diverse physical and intellectual conditions of the scholars

"6 Such reforms in the Scholarship system as shall secure the right selection of suitable candidates for promotion, and the provision of ample opportunity for the free development of mental activity

"7 Recognition of the desirability of securing the services of highly qualified teachers whether in schools in the work of inspection or in the administration of local and central Education Authorities

"8 The adequate representation of teachers on Local Education Authorities and other bodies dealing with educational work'

PROFESSIONALLY "The establishment of a highly qualified publicly recognized independent learned Profession with emoluments and other conditions of service commensurate with its work for the State In seeking this object the Union labours for—

"1 Reforms in the system of training and regulation of the supply of teachers

"2 The social recognition which is given to members of a profession trained and directed free from State assistance and control

"3 Salaries dependent on qualifications, experience, and efficiency of individual service, and not adversely affected by appointment in Infants' Departments or in Rural schools

"4 Equal salaries for class mistresses and masters working in mixed or boys departments

"5 Further improvements in the Superannuation Acts, and provision for superannuation of teachers serving in Secondary and other types of schools

"6 Better conditions of tenure for teachers in Secondary Schools and the inclusion in schemes of clauses granting right of appeal against dismissal

"7 The establishment of a Court of Appeal as a safeguard against unjust dismissal of teachers

"8 Greater freedom for teachers in the formation of schemes of work, suitable to the educational needs of the school

"9 The removal of unnecessarily irksome conditions of service'

In this programme may be recognized that mixture of the ideal with the definitely practicable, that care for details as well as perception of principles and that adaptation of means to ends rather than of ends to means, which have made the Union the successful institution which it is Defective still, though highly organized enterprising and persistent, though cautious also and discreetly guided it has become the principal body of its kind in the world It is numerically the largest and in other respects the most powerful organization of teachers in the world It differs essentially from statutory bodies charged with the progress and dignity of older professions—those, for example, which are less clearly connected with Parliamentary or Local Government and direct payments from the public purse It is, in fact, a great guild within an, at present, unorganized profession, and as a powerful, useful guild is hailed by one school of politico-economic thought as a precursor, a pioneer of the guild governments that may come to be, while other thinkers regard it as being a present instalment of the educated democracies of the future At any rate its members, knowing themselves to be nationally useful individually and nationally powerful collectively look back upon a successful corporate past and forward to greater achievements yet J H Y

NATIONAL UNION OF TEACHERS, WORK OF THE EXECUTIVE OF THE —The National Union of Teachers originated at a conference in London in the year 1870 Arrangements were made for holding annual conferences and a committee of members was entrusted with the conduct of affairs during the year In 1872 this committee was replaced by an "Executive," consisting of a President, Vice-President, Treasurer, Secretary and a Standing Committee of twenty-four members For purposes of organization, the country was divided into twelve districts, and there naturally arose a strong demand that each district should be represented upon the Central Executive This demand was met in 1874 when it was decided that in addition to the twenty four members elected by conference each district should elect one representative whose expenses should not however be defrayed from the Central funds With the exception that the election of the twenty-four members forming the nucleus of the Executive was transferred from conference to the whole membership of the Union this arrangement continued till 1887 It was then decided that each of the twelve districts should elect three members to the Executive district representation thus becoming the only plan The number of members in the several districts varied considerably, and there was much dissatisfaction concerning the anomalous inequalities of representation To appease the districts having the larger membership it was conceded, in 1891, that any district having 4 000 or more members should elect a fourth member With the continued growth of membership this plan soon promised an Executive of forty eight members and as the whole expenses were now being met from central funds the economists urged a definite limitation to thirty-six, as originally planned So in 1907 the present plan was adopted whereby an Executive of thirty six exclusive of the Treasurer, was permanently arranged

The working of the scheme will be readily understood by taking a definite election (Easter 1921) as an illustration The membership of the Union in 1919 was 112,989 Divided by 36 this gave 3,139 as the unit qualifying for representation by one member Each district, therefore returned one member for each complete 3 139 in its membership The surpluses over the complete units aggregated 13 112 or four complete units The four members still required were allocated to the four districts having the largest surpluses The Executive is thus constituted as shown on the next page

While certainly securing proportional representation for each district, the plan thus outlined does not ensure the adequate representation of sectional interests Of the present Executive, 29 are men and 7 are women, 23 are head teachers and 15 are class teachers, 31 are council school teachers and 5 are "non-provided" school teachers (3 Church,

1 R C, 1 Wesleyan), 34 are primary school teachers and 2 are secondary school teachers In order to secure sectional representation, one body (class teachers) resorts to the device of a "ticket" a plan which can be commended only by saying that it is apparently inevitable

	District	Member-ship	Executive Members
1	North England	6 941	3
2	Lancashire[1]	13 602	6
3	Yorkshire	10 101	4
4	North Midlands[1]	6 917	3
5	South Midlands	8 548	3
6	East Anglia	5 585	2
7	South England	7 935	3
8	West England[1]	5 874	3
9	Wales	6 621	3
10	Metropolitan[1]	12 550	4
11	Middlesex Extra-Metro	3 001	1
12	Essex Extra Metro	3 742	1

To secure an unchallenged tenure of office through Vice Presidency Presidency and ex Presidency the members occupying these three positions are declared elected for their districts without election The number of elected members is correspondingly reduced

Yet the Executive of the National Union of Teachers is a body of far reaching power It must be remembered that the N U T is not merely a professional body seeking to improve the status and remuneration of its members but is in a real sense the custodian of the national conscience in matters educational The members of the Executive are therefore confronted with problems which range over a far wider field than is the case with other similar organizations Indeed in many respects the N U T is the sole survivor of the old gilds, which regarded excellence in craftmanship as an essential aim

Administrative Work. As an administrative machine the Executive has reached a high standard of perfection It meets on the first Saturday of each month its main business being to consider and approve or disapprove the decisions of its various Standing Committees Of these there are six working in three pairs each member being expected to sit upon one of each pair These Standing Committees are known as—

Finance and General Purposes	Law and Tenure
Education	Salaries
Parliamentary and Superannuation	Organization

The name of each committee clearly indicates the work which is allocated to it Thus, the Finance Committee deals with the income and expenditure of the Union and with all miscellaneous matters which do not rightly come within the purview of one of the others The Law and Tenure Committee advises and helps the members of the Union on matters arising in connection with their position as employees of education authorities The Education Committee initiates, approves, criticizes, or opposes new educational movements, and its influence in the improvement of our national system of education is widely acknowledged The Organization Committee deals with all activities directly aiming at the efficiency and increased membership of the local associations, arranging meetings, conducting special campaigns, and acquainting newly-certificated teachers with the advantages to be derived from membership The Parliamentary and Superannuation Committee watches the Houses of Parliament with extreme vigilance on matters affecting either the teacher or the child, it performs the delicate task of negotiating for seats for prospective teacher M P 's, and it utilizes both local and national machinery to bring such pressure upon Parliament as, in the judgment of the Executive, is necessary to secure the proper development of education It also as its name implies watches the working of the Governmental Superannuation Scheme for Teachers The Salaries Committee organizes all efforts to secure the better remuneration of teachers as a body It has formulated a Salary Scale," which it recommends as a reasonable basis of payment it supervises all campaigns, whether national or local, which are directed to the improvement of salaries, it collates all information on this matter and then places it at the disposal of the local associations, and it advises the Executive as to the need and wisdom of any suggested "drastic action The prominent part played by the N U T in the various *Burnham* Committees has recently modified but by no means superseded the activities of this Committee

Each of these standing committees is under the chairmanship of a member of the Executive carefully chosen on grounds of knowledge and experience of the work to be done He has the assistance of one of the leading officials of the Union, whose concentration upon special phases has placed the Union in possession of some of the best educational experts in the country

Special committees exist to consider questions of interest to particular sections of teachers Thus, there is a Ladies' Committee a Welsh Committee, a Higher Education Committee, a Continuation Schools Committee a Rural Schools Committee, a London Committee two Extra Metropolitan Committees (Essex and Middlesex), and an Emergency Committee to deal with matters of sudden import which demand attention before one of the standing committees can be convened for the purpose There is also an Examinations Board established with the avowed object of securing that the entry into the teaching profession should be controlled by teachers themselves—an object now being wisely left to the Teachers' Registration Council, it issues many important diplomas in teaching, and does a great work in the examination of students in evening schools and institutes of various kinds, and of candidates for scholarships in secondary and other schools

Temporary committees are from time to time appointed to do special temporary work Thus, the "War Aid" Committee was engaged in watching over the interests of the thousands of teacher-soldiers who, at their country's call, donned khaki

It should be said that all members of the Executive except one are engaged in school work, that much of their work is done in their leisure time, but that most of their employing authorities accord occasional leave of absence from school for Union service Since so much of the work of the Union is for public welfare, this privilege probably reacts for good upon those authorities which grant it W B S

[1] Districts to which an extra member was allocated

NATIONS, LEAGUE OF.—(See LEAGUE OF NATIONS, EDUCATIONAL ASPECTS OF A)

NATORP, BERNHARD CHRISTIAN LUDWIG (1774-1846)—A German preacher and pedagogue, was professor in the Elberfeld gymnasium in 1795, and in 1809 was put at the head of educational affairs at Potsdam and from 1816 to the end of his life held the same position at Munster He promoted the teaching of the plain chant in German Protestant schools criticized mutual instruction in the schools of Bell and Lancaster and wrote numerous works on school libraries pedagogical literature, and the teaching of singing

NATURAL HISTORY MUSEUM (Cromwell Road London S W 7)—The British Museum founded by Act of Parliament in the year 1753 was placed under the management of a Board of Trustees who acquired Montagu House, Bloomsbury for the reception of the collections The Museum was distributed, at first, into three Departments Manuscripts, Printed Books and Natural History, the collections after arrangement in thirty eight rooms, were made accessible to the public on 15th January 1759 In course of time the collections were so much increased by presentation bequest exchange and purchase that the Trustees arranged for the transfer of the Natural History section to a specially designed building at South Kensington its eastern galleries were opened to the public on 18th April 1881, its western galleries in succeeding years as the zoological specimens could be removed from Bloomsbury and rearranged The Natural History section has undergone repeated sub division there are now five Departments namely Zoology Entomology Botany, Geology and Mineralogy each is in the charge of a keeper with a staff of assistants The whole institution is under the superintendence of the Director

The collections in the Natural History Museum include specimens so far as it has yet been possible to obtain them representative of every known species and variety of animal plant and mineral and it is often by direct comparison with typical specimens in such collections rather than by mere reference to published verbal descriptions that an investigator determines whether a newly found natural product belongs to a kind already recognized or is new to science

The number of specimens requisite for the adequate representation of the characters of the species and varieties of known natural products is extremely large the specimens of Insects for example, in the Museum already far exceed a million, the Shells amount to half a million It is at once impracticable unnecessary and undesirable to exhibit all the specimens that require to be preserved for the purposes of reference Most of them after being registered named classified and labelled are kept in drawers and are thus protected from the harmful action of dust and light in this way they can be stored compactly and yet be so arranged that they can be readily found—like the books of a reference library—for examination by persons engaged in research From these extensive collections specimens, comparatively small in number have been selected for exhibition The labels are printed and the whole exhibit may be likened to a scientific treatise on Natural History illustrated by actual specimens

In each large section of Natural History there is a systematically arranged series showing the characters of the more important species and varieties, they occupy the greater part of the space available for the purpose of exhibition With the aid of these series, a collector is able by direct comparison and with economy of time to discover for himself to what species his own specimens belong the student can learn the more evident characters of animals plants and minerals and the methods of classification while the general visitor can scrutinize at his leisure specimens of the natural products that are found in his own or other countries or in the lakes rivers and oceans and are mentioned in the books he has read With many groups of exhibited specimens in these Systematic Series are placed small maps of the world coloured to indicate quickly to the eye of the visitor the region in which individuals of the group have been found or tables of geological strata coloured to indicate the epoch of time in which the individuals had lived

In addition to the Systematic Series there are exhibited subordinate collections designed primarily for the education of students yet so labelled as to be of great interest also to the general visitor They may be indicated for each department in turn

Mineralogy A series of specimens and labels arranged in a single window case of the Mineral Gallery forms an elaborate but simple 'Introduction to the Study of Minerals it shows how essential characters have been gradually recognized and how minerals have been distributed into kinds and classified in three adjacent window cases carefully chosen specimens illustrate the various characters of minerals and the terms used in their description A corresponding "Introduction to the Study of Rocks extends over the next six window-cases of the Gallery and an Introduction to the Study of Meteorites is placed in the Mineral Pavilion In the latter room is also a series of specimens selected and arranged by the late Professor Ruskin to illustrate the more common forms of Native Silica

Botany Two bays of the Central Hall (Nos IX and X) contain a series of specimens illustrating the characters of Plants and the terminology of botanical science In the next bay (No VIII) a series of photographs shows the winter and summer aspects of the various Trees native to or grown in Great Britain and specimens models and drawings relate to their fruits seedlings the texture of the wood, and the general characters of the bark In the Botanical Gallery itself and in addition to the main systematic series of exhibited specimens there are subordinate series of Insectivorous Xerophytic Epiphytic and Climbing Plants and illustrations of adaptations for defence dispersal of seeds and fertilization of flowers

Zoology An Introduction to the Study of Vertebrates is furnished by a series of exhibits in five bays (Nos I—V) of the Central Hall Skeletons illustrate the various modifications of the bony framework of Mammals to suit different conditions of life (Bay I) modifications of the skull hand foot, teeth are explained in the same bay series in the next bay (No II) show modifications of the outer covering (the skin) of Mammals by expansion by development of bony plates by modification into scales also they illustrate hair, nails, claws and hoofs horns and antlers Dissections of the principal internal organs of various Mammals are also here shown Bays III, IV and V similarly relate to Birds Reptiles, and Fishes respectively Special mention may be made of numerous cases

in the Bird Gallery showing with great fidelity to Nature, nesting habits and characteristic attitudes The series of well labelled specimens exhibited in the Reptile and the Fish Galleries form introductions to the study of those vertebrates As regards Invertebrates an Introduction to the study of Protozoa and an Introduction to the study of Sponges are arranged at the end of the Coral Gallery Series illustrating the characters of Shells and the structures of the animals that form them and carefully labelled sets of specimens forming introductions to the study of Starfishes and Crustaceans, are shown in their respective galleries

Special cases in the Central Hall deal with more general relations for instance a series of specimens of Ruffs and Reeves illustrates external differences in the two sexes and changes in the plumage at different seasons another the variations according to season and age in the plumage of the Mallard (Wild Duck) a third shows the Mountain Hare Stoat Weasel Willow Grouse Ptarmigan and Arctic Fox in their summer dress a fourth the same animals in winter dress a fifth various desert animals protected by the approximation of their colour to that of their surroundings a sixth the general similarity of aspect of certain animals especially insects, to objects among which they dwell or to other animals

The great extent to which the characters of species may be varied under domestication is illustrated in the Central Hall by a set of breeds of Pigeons all derived by selection from the wild Rock Dove by a set of Domestic Fowls by a set of Canaries and in the North Hall, by specimens of the principal breeds of Oxen Sheep Goats Cats Dogs and other animals

Entomology The exhibit in the table cases of the Insect Section of the Arthropod Gallery consists of a series of specimens so labelled as to form an introduction to the study of insects one in a wall-case is explanatory of their structure Special cases in the Central and North Halls illustrate the relations of Insects and other animals to various diseases of both animals and plants

Geology Mention must be made of a series of rock specimens representing the various geological formations of the British Isles in the upper part of the wall-cases is a coloured diagram giving a section of all the sedimentary rocks of the country in the order of their succession each bed shown in the diagram corresponding to the specimens beneath

About forty guide books have been published to make the study of the various parts of the Museum more easy for visitors and an official guide twice a day, conducts parties round one or more galleries, free of charge L F

NATURAL HISTORY, THE EARLY TEACHING OF —Aristotle (384–323 B C) wrote a *History of Animals* Theophrastus (371–288 B C) on plants, and Galen (*b* A D 131) on medical subjects Even up to the time of Milton s *Tractate of Education* 1644 the study of physic or medicine was regarded as a part of the general education of a gentleman Lord Herbert of Cherbury (1583–1648) wrote a detailed list of medical text-books which a gentleman should know On the grand tour, it was quite common for a young gentleman, whilst at Padua or Montpellier "to learn something in physic to be able to understand the grounds of it" In the proposed academy of Sir Humphrey Gilbert (*c* 1572) for young nobles and gentlemen, there was to be a doctor of physic to read physic and chirurgery at a salary of £100 a year This study of physic, so far from being a novelty in Queen Elizabeth's reign or in the time of Milton, was a "survival" Vives in his *de Tradendis Disciplinis*, 1531, urges that every well-trained youth should read his Galen (*q v*) for medicine, and Pliny (*q v*) for natural history

Physician Schoolmasters. But more directly interesting is the fact that physics was often, in earlier times, a part of the schoolmaster's equipment Neander (1525–1595) was a great classical scholar physician and schoolmaster Christopher Johnson head master of Winchester College (1560–1571) left schoolmastering and went at once to practise physic in Westminster, and similar accounts are given of masters from the school attached to Magdalen College, Oxford In the statutes of Camberwell Grammar School, 1615, it is ordained that the master shall not practise physic "without the consent of the governors", whilst the earlier Ordinances of Bristol Grammar School (founded 1533) prescribed that the master should be an M A , or a Bachelor of Laws or Physic of two years' standing John Hyrd (or Herd) the writer in Latin verse of *Historia Anglicana* (*c* 1580) (see HISTORY IN ENGLAND THE EARLY STUDY OF), was a physician Perhaps the best known instance is that of Philemon Holland M D in 1628 head master of Coventry Grammar School who in 1601 had made the famous translation of Pliny's *Natural History* Such a schoolmaster is hardly likely to have omitted to make natural history from the point of view of ancient times, and even perhaps of contemporary knowledge, of some influence in teaching in his school The close connection of teachers and physicians probably points to the imparting of general knowledge incidentally in Elizabethan schools as well as of the classical languages which are supposed to have had a monopoly in instruction

The study of physic which so often carried with it the study of natural history, was especially a feature in the training of the mediaeval lady (see WOMEN EDUCATION OF) and this training continued through Elizabethan and Stuart times until late on into the eighteenth century when Bluestocking and literary influences began to overshadow, in some cases the more distinctively domestic concentration of women's studies

The Evolution of Botany The insistence on observation is noticeable in J L Vives (*de Tradendis Disciplinis* 1531) two generations before Bacon Vives says "We look for the pupil to be keen in his observation, and to be diligent in it So will he observe the nature of things in the heavens, in clouds and in sunshine in the plains in the mountains in the woods Let him have recourse to gardeners husbandmen shepherds and hunters for any one cannot possibly make *all* observations without help" The real awakening impetus to observation was the discovery of America and the West Indies and its development may be traced in the descriptions of plants animals, and native-life of hitherto unknown lands Such prompting to observation quickly extended itself to a renewed interest of observance in the nature life of the native land Francis Bacon's call to observation was the *result* of this spirit of a more scientific observation by navigators and travellers, not the cause, and, as we see in Vives, the application had been made to school teaching long before Bacon and Comenius The order of evolution seems to be

medicine herbals botany In 1640 John Parkinson produced his *Theatrum Botanicum* and in 1659 his *Paradisi in sole Paradisus Terrestris* On the side of the classics Theophrastus and Dioscorides, Virgil s *Eclogues Bucolics*, and *Georgics* Columella and Varro were read, and even the *Phaenomena* of Aratus It is clear from Lord Herbert of Cherbury (1583–1648) that it was regarded as a gentleman s occupation to be a good botanic" The first use of the term 'botany is said to be by John Ray in 1696 The first Professor of Botany at Oxford was Robert Morison in 1669, whilst the first lectures on the subject at Cambridge were in 1727 The first to propose a botanical garden for England was Sir Humphrey Gilbert and in 1632 the Oxford Physic garden was started whilst that at Cambridge was begun in 1762

It was in connection with the Royal Society that scientific botany and zoology were developed Nehemiah Grew in 1681 published his *Musaeum Royalis Societatis*, which contained a catalogue and description of several thousand specimens of natural history It is noteworthy that many of the specimens came from travellers connected with the East India and Royal African Companies The beginnings of the teaching of natural history must be traced to physician schoolmasters Chap ters can be found on the subject in text books such as Comenius s (*q v*) *Janua Linguarum* and *Orbis Pictus* For this essentially 'gentleman's" study the source of 'emblems and of "heraldry" in which subject old folios included accounts (often fabulous) of plants and animals must not be over looked But until the age of maritime discoveries the ancient works of Galen and Pliny were read and accepted just as those of Aristotle ruled in general philosophy The earliest regular teaching of natural history in England was in the eighteenth century at the famous Warrington Academy under the influence of J Reinhold Forster (fl 1767–*c* 1770) who had been a companion of Captain Cook in his second voyage round the world In girls private schools also natural history was taught though the first well known school text book only goes back to 1798—Priscilla Wakefield s *Introduction to Botany* with its good illustrations F W

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NATURAL PHILOSOPHY, HISTORY OF THE TEACHING OF EXPERIMENTAL.—The two great sources of the subject were derived from differentiations in the various parts of mathematics and of astronomy In modern times, in the subject of mechanics in 1583 Galileo discovered the principle of the pendulum, and in 1589 the law of falling bodies and the laws of motion, though the last-named were only fully formulated and developed in 1687, in the *Principia* of Sir Isaac Newton. Galileo thus is the pioneer of the modern science of dynamics

In 1586, Stevinus published his *Statics and Hydrostatics* The great English mathematician John Wallis (*q v*), Savilian Professor of Geometry at Oxford wrote *Mechanica, sive de Motu tractatus Geometricus*, published in his works 1699, but, important as these works were in the development of the knowledge of the subject, they were scarcely text-books for the teaching of the subject Stevinus and Wallis thus rank as pioneers in statics More approaching the modern idea of a teacher's text-book was a book by John Wilkins the first secretary of the Royal Society (1662) in which he states that his treatise was the first on the subject in the 'vulgar tongue It is entitled *Mathematicall Magick or the Wonders that may be performed by Mechanicall Geometry In two Books concerning Mechanicall Powers and Motions Being the most easy pleasant, usefull (and yet most neglected) parts of Mathematicks Not before treated of in this language* (published in 1648) He gives an account of the balance the lever and the relation of the natural motion of living creatures to these prin ciples the wheel the pulley the wedge and the screw He discusses the manufacture of submarine boats and the possibility of "flying chariots"

In 1668 in his *Plus Ultra* Joseph Glanvill argued for the great superiority of the modern over the classical world of knowledge and gave definite instances in support of his view, of the "improvements' in mathematics astronomy optics, the use of the telescope microscope thermometer barometer and air pump in experimental improvements in natural history

The Universities and the Royal Society It is to be noticed that none of this new knowledge was disseminated in the universities of Oxford and Cambridge The first university (the Jacksonian) professorship in Natural and Experimental Philosophy was established at Cambridge in 1783 The first professor was Isaac Milner who lectured on experimental philosophy and chemistry A professorship in Chemistry had existed at Oxford since 1683 and at Cambridge from 1702 where an Italian (J F Vigani a native of Verona) was the first professor

At Oxford Thomas Hornsby (1782–1810) was the most eminent of the early Sedleian professors of Natural Philosophy The real centre of experimental natural philosophy was the Royal Society (1662) which had its beginning in a small assembly of scientists (chiefly physicians) at Oxford (*c* 1645) Amongst the great scientists connected with it were Boyle Hooke Ray Grew Malpighi Huyghens Halley and Sir Isaac Newton The progress of the Royal Society (1662) till the nineteenth century epitomizes and largely monopolizes the development of English experimental science (See GRESHAM COLLEGE)

Experimental Science in the Academies. About 1648 Sir Balthazar Gerbier proposed to include natural experimental philosophy in his projected academy at Bethnal Green In 1649 John Hall, of Gray's Inn, advocated the teaching of experimental science in the universities in his *Humble Motion to the Parliament of England concerning the Advancement of Learning* He was followed by John Webster, in 1654, in his *Examination of Academies*,

and Abraham Cowley, in 1661, pleaded for a Baconian Philosophical College, with twenty professors, four of whom were always to be travelling for scientific discoveries, and the remaining sixteen to study and teach "all sorts of natural and experimental philosophy" This college was to have a *school* attached to it for 200 pupils In 1649 George Snell advocated the introduction of the teaching of Optics in the school Seth Ward, Savilian Professor of Geometry at Oxford, 1654, was a warm supporter of the teaching of "agriculture mechanics chemistry and the like' But enterprise in the old universities steadily declined from the Restoration of 1660 onwards and throughout the eighteenth century The first school actually to teach scientific subjects appears to have been the Business Academy or Accountants' Office in Little Tower Street London whose proprietor was Thomas Watts The courses in experimental philosophy were "performed' by Benjamin Worster M A, whose syllabus included the laws of motion gravitation of fluids the air as an elastic fluid the principles of optics (following Newton s principles) mechanics hydrostatics pneumatics optics The fee for the course was two guineas and a half The text book was apparently written *ad hoc* "*A Compendious and Methodical Account of the Principles of Natural Philosophy As they are explained and illustrated in the course of Experiments performed at the Academy in Little Tower Street* By Benjamin Worster, 1722" Thomas Watts the head master translated from Rohault the French mathematician *A Treatise of Mechanics*

In 1743 Benjamin Martin published a course of Lectures on Natural and Experimental Philosophy etc "confirmed by experiments and illustrated by copper-plates' Martin was a peripatetic lecturer throughout England and in the intervals of lecturing was an optician and globe-maker The attempt in the eighteenth century to popularize in schools the results of Newton's discoveries is seen in a book *The Philosophy of Tops and Balls or The Newtonian System of Philosophy* 1761 In 1787 under the curious pseudonym of "Tom Telescope, A M' an author wrote for the youth of the United Kingdom *The Newtonian System of Philosophy adapted to the capacities of young Gentlemen and Ladies and familiarised and made entertaining by objects with which they are intimately acquainted*

The dissenting academies of the eighteenth century showed their educational leadership in the inclusion of natural philosophy in their curriculum Thus at Kibworth in 1728 Philip Doddridge a student there, states that in the third half-year of the course mechanics (systems of lever, screw, pulley, wedge, etc), hydrostatics, and physics were taught They had tutors like John Eames, F R S a friend of Newton (*d* 1744), and at Warrington, 1757, was John Holt, "whose whole soul was said to be absorbed" in natural philosophy (see Parker, I, *Dissenting Academies*, p 105), and in 1786, at Hackney College, was Abraham Rees, tutor in the natural sciences The greatest chemist of the eighteenth century came from the atmosphere of a dissenting academy, viz, Joseph Priestley, who had learned his natural philosophy at Daventry, and taught experimental science at Nantwich and Warrington, 1758–1765 It was undoubtedly in these institutions in the eighteenth century that the best work in experimental science teaching was done F W

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NATURAL SIGN, A—This is a gesture suggestive of an idea usually expressed in words Anger alarm hunger and mirth may be represented by appropriate movements and gestures when the causes giving rise to these feelings are not present

NATURE STUDY, THE TEACHING OF.—There is need to insist that Nature Study is not to be conducted by delivery of lectures, not even demonstration lectures nor by reading of books Its objects are to train the eye to observe what it sees, the mind to think about what is seen and to acquire knowledge of things and processes at first hand, to awaken intellectual interest and to inculcate a habit that shall influence the whole character By it, the virtues of neatness, dexterity, and patience are encouraged, and the aesthetic powers developed to appreciate beauty of form and colour But the essential thing is to arouse interest—interest in learning, interest in personal endeavour Mental drill and discipline are not the sole consideration there is an unconscious discipline, both mental and otherwise that is the product of genuine and fruitful interest

To realize these objects, the lessons must deal primarily with things that come frequently under the notice of the pupils Thus the exact shape that the Nature Study should take depends largely upon the season of the year and also upon the locality of the school Much however, can be done even in schools unfavourably situated in great towns Daily systematic readings of the thermometer and barometer can be taken and duly charted, the direction of the wind noted, and many other meteorological observations undertaken all of which constitute small investigations and lay the foundation of habits of accuracy and of methodical study With the simplest appliances, a child can find out for itself the altitude of the mid-day sun throughout the year, and the relation that this has to the number of hours of daylight at the various seasons With a little help, he can find for himself the points of the compass both by the shadow cast by the mid-day sun and from the pole star Having the cardinal points marked on the school field, he can proceed to draw to scale a map of the premises—nor should an atlas be used nor geography begun without this preliminary Again, the successive phases of the moon—her times of rising and setting, and, at the coast, her connection with the tides, or, yet again, the movements of the planets and apparent motions of the stellar constellations—all lend themselves admirably to our purpose

To Descend from the Celestial. The rills on the surface of a road wet with a recent shower may

form the starting point of a series of inquiries which passing through the diminutive wayside delta may lead up to denudation in all its varieties—to physical geography—to the explanation of river courses of hills and valleys of the shingle and sand of the seashore to the stratification of rocks and may culminate in the influence that natural features have had in determining the great centres of civilization the trade routes and in shaping the whole course of human history

The Study of Plants and Animals Both botany and zoology abound with subjects suitable for investigation by young children The structure and germination of seeds the several parts of flowers and their respective uses the influence of light upon green plants the physical and mechanical problems of vegetable life the silent struggles of plants one with another—their means of defence the structure and dispersal of their fruits—these and a host of other topics are within the reach of juvenile research Similarly in the animal kingdom insects spiders worms snails, frogs and tadpoles birds and even the domestic animals afford abundant material for study though the last named are not suitable for class work The main purpose here will be to ascertain how each animal lives—how it moves feeds breathes grows cares for its offspring and in general has its being Both structure and function must be studied precedence being given if at all to the former rather than to the latter The apparatus for this biological work can and should be very simple pie dishes flower pots wet sawdust blotting paper cigar boxes and a few sheets of glass (cleaned "negative' plates) suffice for the plant work (in country schools the garden plots will provide many opportunities) while breeding cages (which may advantageously be made by the children themselves) glass jam jars for aquaria and small card or chip boxes will be needed for animal study The addition of a watchmaker s eye glass or other form of hand magnifying glass and of a needle mounted on a wooden handle is worth the slight outlay involved though much can be done without these aids

Method of Conducting a Lesson Turning now to the mode of conducting Nature Study lessons it should be a cardinal rule with the teacher never to tell the children anything which they ought to be able to find out for themselves with the apparatus at their disposal on the other hand guidance is needed to direct the observations and inquiries in an orderly sequence and to lead the young researcher into fruitful and encouraging paths Each pupil should be provided with at least one specimen for the lesson The teacher should draw up beforehand a definite list of questions relating to the object in hand and so framed that step by step the facts shall be ascertained and then easy conclusions deduced These questions may be written upon the blackboard a few at a time or separate slips may be copied and handed round to each member of the class The answers can be written down by each pupil the whole then discussed by the teacher, and many of the same questions repeated *vivâ voce* and marks perhaps assigned for the oral work The written results can subsequently be corrected and returned with comments at the next lesson The greater proportion of marks should certainly be allotted to the written work and drawings Much importance attaches to the composition of the answers, children are apt, when writing an answer to a printed question to reply —as though *vivâ voce*—in a single word or with an incomplete sentence The teacher should insist on every answer being a complete sentence perfectly intelligible to anyone reading it, even in ignorance of the exact form taken by the question Failure to enforce this not only misses a great opportunity but leads to habits of slovenly thought and still more slovenly writing Eventually the teacher may, with propriety tell the class a few interesting facts about their given object confining himself to such as are beyond the scope of juvenile research

It is often the case that in a long series of questions directed to some one object the later depend more or less upon the correct solution of the earlier It is therefore desirable to break the lesson into sections and to make sure that the "lame ducks' do not lag hopelessly in the rear or flounder in a sea of inaccurate preliminary observations In a large class there will be some who fail to see the bearing of the plainest question and unless such weaklings receive early help they get thoroughly discouraged and instead of gaining self reliance suffer the reverse experience and are the worse rather than the better for the lesson Such pupils need more individual attention and it should be the business of the teacher to move about the class room while the pupils are writing their answers and to make sure *by subsidiary questions and by no other means* that these congenital laggards are making due headway

It may be objected that the method here advocated is slow and the amount learnt in a given time very slight Granted but the amount matters not one jot it is the manner of learning that matters and matters most at that early stage of education for which Nature study is intended Such knowledge as is thus gained is acquired not upon authority nor by rote but solely as the result of individual endeavour to learn direct from Nature herself For each child the work is a piece of original research and though the fact be in every text book yet for the child it is fresh knowledge gained in the same way as that by which in later life he may gain knowledge that as yet lies hidden in the unopened pages of Nature The child is guided and taught what questions are to be put that afterwards he may know how to formulate his own inquiries how to devise his own experiments his own acts of interrogation and that he may find a fuller happier life in so doing Few are destined to make any actual use of the knowledge obtained from a course of Nature study but all can be so trained in habits as to approach their life s work be that what it may in a scientific spirit—ready and desirous to learn and to let no fact escape them

O H L

NATURE STUDY UNION, THE SCHOOL.—This Union founded in 1903 aims at bringing together for mutual help and advice those interested in Nature Study in general and its place in education in particular For this purpose, it holds meetings in winter excursions throughout the year for practical Nature Study, annual conferences and exhibitions co-operates with other societies and issues an official quarterly organ entitled *School Nature Study* It has as a motto "To see and admire not harm or destroy' The Union has organized a Photographic Section applied to Nature photography and ecological record, a Gardening Section that deals with horticultural principles and operations mainly as applied to school gardens,

and a Microscopic Section The annual subscription is four shillings.

NAUTICAL ASTRONOMY, THE TEACHING OF. —The navigator has to mark on his chart the exact position of his ship To do this, he draws two lines the intersection of which marks the spot One line may often be obtained by compass or chronometer, the second must be determined by observation of some heavenly body Sometimes both lines have to be obtained by observations

Nautical astronomy enables him to compute—from observation of sun moon or star—the numbers to guide him in drawing the required line or lines

A short course in spherical geometry should be given including great and small circles spherical angles and triangles and the polar triangle Follow with a course of spherical trigonometry choosing only those theorems that lead to the solution of triangles—scalene right angled and quadrantal

A knowledge of the Solar system is indispensable the relative distances of the planets and the revolution of their moons must be explained the orbital movement of our Moon should be discussed and its path among the stars noted by the pupil

The Stellar system must be explained the apparent daily rotation the axis of rotation the poles the constellations are the main points

Definition of Terms Now will come definitions of astronomical terms An armillary sphere is of great service but the pupil must indicate by arm movements in the open air the lines on the celestial concave referred to when the sphere was used

Let him face E , extend his left arm towards the N Pole raise his right arm till its direction is at right angles with that of the left then still maintaining the angle the right arm is moved round it indicates the Celestial Equator Right ascension and declination may then be easily explained and illustrated Equally important is the Horizon—sensible, rational celestial and sea connect with it altitude azimuth amplitude The Celestial Meridian must be made familiar connect with it mean time, hour angle Greenwich mean time and sidereal time In like manner as the other circles—great and small—are indicated by him let the astronomical terms connected with them be explained He should next be required to draw diagrams on the plane of the horizon and also of the Equator Easy problems in latitude when the celestial body is on the meridian should now be introduced and others in amplitude, when the body is on the horizon will tend to make him familiar with this important projection He may now be required to take the angular measurement of bodies from the horizon by means of the sextant

The Use of the Sextant Be sure he is familiar with the construction and principle of the sextant Make him understand that it is an instrument for measuring *the inclination of the two mirrors* and that by a law in Optics, easily demonstrated, it measures the angular distance between the actual place of a body and its reflection in the " horizon " glass He should understand the framework, the necessity of having both mirrors perpendicular to the plane in which the index bar moves, the graduation of the arc and how to deal with the " index error ", the position assigned to the telescope collar, and the danger of using the instrument for other than distant objects

His usefulness as a navigator will depend chiefly on his skill in the use of the sextant observations must be quick and reliable, qualities depending on much practice and care

The Use of Reference Books. Introduce to his notice the *Nautical Almanac*, and run through the contents with him see that he is able to find " Greenwich date " corresponding to any local time, and proceed to the use of the *Almanac* by requiring him to take out the right ascension and declination of sun moon planet and star for any date and longitude The given hourly variation must be used to get the exact R A and declination Problems on *time* should follow so that he may fully grasp the meaning of apparent mean and sidereal time and the way to apply the equation of time always insist on the Greenwich *date* being written in full

He will now be able to find the time for a body to be on the meridian of any place Vary the question to test his knowledge of *mean* as opposed to *apparent* time

The formulae for the solution of spherical triangles are required for subsequent work of finding longitude (by a chronometer) and latitude when the celestial body is not on the meridian Always draw a diagram and mark the parts of the triangle given or obtainable from the *Nautical Almanac* the formula which will supply the desired quantity is then easily selected Take the method of solution from a reliable text-book J E E

NAUTICAL SCHOOLS —As science advances the requirements of an officer in the Mercantile Marine must of necessity increase Except for training purposes the days of the square-rigged sailing ship are numbered These craft are now replaced by the modern steamship which is a complexity of machinery both for propulsion and expeditious loading and discharging The methods used in navigating these present day craft have changed very largely The Board of Trade have therefore, brought the standard of requirements of their examinations more into line with modern methods The Mercantile Marine officer of to-day must perforce have a more extensive knowledge of navigation in all its branches than that of his predecessor Considering the prestige of England as a mercantile nation it is regrettable that there are so few nautical schools where a boy may receive a good, sound nautical and general education fitting him to take his place as an educated officer on the bridge of a modern liner or cargo-carrier

There are four nautical schools in England well known to all " toilers of the sea ' Entry to three of these is impossible for those boys whose parents are not in the position to spend about £150 a year on their sons training

The Work of Messrs Devitt & Moore (Messrs Devitt & Moore s Ocean Training Ships, Ltd) In the year 1890 Messrs Devitt & Moore, of 12 Fenchurch Buildings, E C 3 in connection with the late Earl Brassey inaugurated a scheme to enable boys who wished to become officers in the Merchant Service to receive a thorough training to fit them for their career Since that date the firm have received large numbers of cadets, and have afforded them a training in their well-known square-rigged sailing vessels which traded between England and Australia These cadets after having completed their training, have become valued officers in the Mercantile Marine and Royal Naval Reserve A few years ago a Company—Devitt & Moore's Ocean Training Ships, Ltd —was formed to carry

on the training scheme and several of the leading steamship companies are among the list of shareholders

The Nautical College, Pangbourne In 1917 in order to make the scheme of instruction still more efficient and up to date Devitt & Moore s Ocean Training Ships Ltd opened the Nautical College Pangbourne, Berkshire By arrangement with the Admiralty the boys are enrolled as Cadets, R N R The course of training comprises navigation nautical astronomy use of nautical instruments seamanship boat-pulling and sailing signal ling engineering and other subjects of a general educational character The cadets remain at this shore establishment for two or three years, one year of which counts as twelve months sea-time After this period the cadet is drafted to one of the Company s Ocean Training Ships where he undergoes another year s training From the O T S the cadet is drafted into the Royal Navy if accepted by the Admiralty, for a period of eight months The fees at the College are £160 per annum and cadets are selected by qualifying entrance examination and after a personal interview with the managers the age of entry being between 13½ years and 14½ years

The "Conway" and the "Worcester" (H M S "CONWAY" SCHOOL SHIP) This wooden full rigged school ship moored off Rock Ferry (River Mersey) is managed by a committee of the Mercantile Marine Service Association Liverpool The cadets whose fees are about £80 per annum receive a thorough training in the same subjects as those taught at Pangbourne College and in addition receive practical instruction in bending and unbending sail sending masts and yards up and down etc The cadets two years training on the ship counts as one year s sea time

(H M S 'WORCESTER" SCHOOL SHIP) The object of this institution like that of the *Conway* is the training of cadets as officers in the Mercantile Marine Both these ships are very spacious and most suitable for carrying on the instruction in nautical subjects in the most practical manner The *Worcester* is anchored off Greenhithe River Thames Boys are admitted between the ages of 11 and 15½ years and are charged fees which are much the same as those for the *Conway* Doctors and nurses are in regular attendance at all these schools and well equipped sick bays and isolation wards are provided Special attention is devoted to all sports and games and attendance is compulsory Swimming receives careful and expert attention

Shore Schools (THE TRINITY HOUSE NAVIGATION SCHOOL HULL) This boarding out establishment accommodates about 150 boys who are chosen by competitive entrance examination and after a personal interview with the Managers who are the Honourable Brethren of the Trinity House The boys are admitted between the ages of 11 and 12½ years and receive a sound nautical and general education At the age of 15 they are apprenticed to the various steamship companies and serve four years at sea At the expiration of all cadetship or apprenticeship, the young man is permitted by the Board of Trade Regulations to present himself as a candidate for Certificate of Competency for Second Mate

Nautical Preparatory Schools for Adults Throughout the British Isles, in the leading seaport towns, there are to be found these schools enabling intending candidates for any grade of certificate to receive a preparatory course of instruction In all probability, the cadets' time on board ship is fully occupied with duties other than private study, and it is found necessary to receive a short course covering about three weeks in the case of the young man who has had previous training but in the case of the untrained it is often found necessary to extend the period to one of several months C H A

NAVAL ARCHITECT, THE TRAINING OF A.— The system of training naval architects which has been longest established and has been responsible for the education of many prominent members of the profession not only of this country but also perhaps, of the whole world is that which is laid down by the British Admiralty in the courses followed by students who desire to become naval constructors The broad outlines of this scheme are generally the same to day as they were fifty years ago though minor introductions and amendments have been rendered necessary by the development of steel from iron and earlier of iron from wood ship-building and also by the growth of knowledge in applied mathematics and in physical science A brief description of this method is therefore desirable although it must not be forgotten that the facilities given for educational purposes by Government departments cannot be so readily provided in commercial establishments

The Royal Corps of Naval Constructors is largely recruited from the apprentices of the Royal Dock yards of which Devonport and Portsmouth are the most important The entry of apprentices is regulated by open competition candidates being 15 years old

The subjects of examination are mathematics, English history geography science and drawing

The keenness of competition renders it necessary that a good secondary school education should be obtained in fact special schools exist in most dockyard towns for the preparation of candidates

Free education is provided for all apprentices and those who acquit themselves favourably are retained for a second year Similarly, a selection is made at the end of the second and third years Third and fourth year students receive advanced instruction in the Upper School and at the end of the period are examined in mathematics applied mechanics metallurgy heat and electricity as well as in practical ship building and ship-drawing

The school instruction for all apprentices with the exceptions mentioned later ceases at the end of the fourth year although the apprenticeship as such is not normally completed until the expiration of six years from date of entry

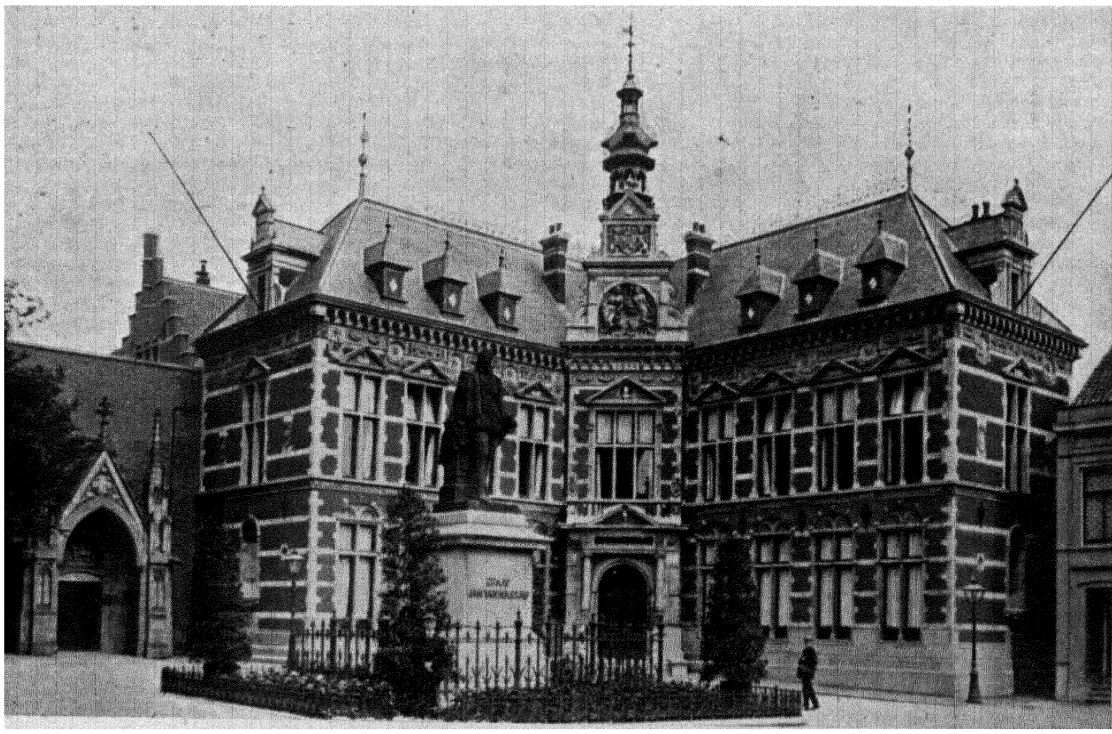
Naval Construction Cadets From the result of the fourth year examination a limited number (perhaps two or three) of Naval Construction Cadetships are awarded, and the cadets appointed remain in the dockyards for a fifth year of special instruction preparatory to entry into the Royal Naval College Greenwich

The greater part of the daytime of the apprentice is spent in practical work the school education being carried on for two afternoons and three evenings a week for about nine months of the year

Each apprentice is allocated to a shipwright instructor and is trained to carry out all the operations relating to steel structural work woodwork, boats, masts, and general ship-fitting Experience is also obtained in the construction, maintenance, and repair of warships A period of six months is



University of Amsterdam



Utrecht University

PLATE LXVI

generally spent in the drawing office during the last two years of training

The Naval Construction cadets spend three years at the Royal Naval College The education during the first year comprises courses in mathematics, applied mechanics heat engines, electricity chemistry ship construction and design For the second and third years advanced treatment of the same subjects is pursued with particular attention to their application to naval architecture

The final examination includes papers in pure and applied mathematics applied mechanics theory of ship-propulsion stability and oscillation of ships, ship-building and ship design

Professional certificates are awarded the standards being approximately 75 per cent for first class 60 per cent for second class and 45 per cent for third class A second-class certificate is required for entry to the Royal Corps of Naval Constructors a first class is obtained by few

Naval Construction Cadets may enter direct without a dockyard training and special privileges are granted to Honours graduates in naval architecture from the Universities of Durham Glasgow and Liverpool but up to the present very few have entered in this manner A limited number of private students who have qualified at the entrance examination to Greenwich College may be allowed to attend the courses

The Admiralty makes an annual allowance of £120 to the cadets at the Royal Naval College They are rated as Probationary Assistant Constructors with the equivalent rank of sub-lieutenant and wear a naval uniform

Naval Architects in Mercantile Establishments The training of naval architects in the mercantile establishments is not in general so well provided for and further education has to be paid for by the apprentice Certain prominent firms have however of recent years granted privileges to apprentices who attend technical evening classes But the long hours of work militate against educational instruction which in the great majority of cases is only given after working hours

In consequence the majority of students of naval architecture enter as apprentices to the drawing office where the working hours are shorter The disadvantage is that he may find a difficulty in obtaining practical experience in the shipyard though in deserving cases many employers will grant some facilities in this direction

Most firms of any size impose an examination for entry as a drawing office apprentice the qualifying age being about 16 and the time of apprenticeship being five or six years The student who desires to follow the higher branches of naval architecture should prior to entering the yard obtain a good secondary school education and should have obtained a school leaving certificate which will enable him to be exempted from the matriculation examination for the university of either Glasgow Durham or Liverpool If possible, it appears better to remain at school until the age of about 17 years is reached His studies in mathematics applied mechanics general science, and naval architecture should be continued throughout the apprenticeship by attending evening classes

Apprentices are usually given opportunities to familiarize themselves with the various departments of the drawing office, such as the scientific section the iron-working section, and the design section In some cases apprentices who proceed to a university or college for higher instruction are allowed to leave the firm at the end of three years in the office, and if they spend three years at such institutions, are allowed to count the time (or a portion of the time) towards the completion of the term of indenture

University Courses. It is probable, therefore, that a student will be from 20 to 21 years old before he enters the university where he must spend three years before he can obtain a degree it is nearly always beneficial to attend some of the Honours courses even if the Honours degree be not obtained The instruction provided in the universities embraces a good knowledge of applied mathematics and applied sciences including therein a course in heat engines while on the naval architecture side, attention is devoted to the stability oscillation, resistance and propulsion of floating bodies and to the design and construction of vessels

Scholarships, etc. The cost of living and instruction at the universities is often reduced by obtaining a scholarship which a capable student has a good chance to secure for it so happens that at the present time the number of scholarships offered by scientific institutions is relatively large as compared with other branches of engineering Apart from the general entrance scholarships given by the universities themselves Lloyd s Register of Shipping offers one scholarship annually of the value of £100 at each of the Universities of Glasgow Liverpool, and Durham which scholarship is available for three years

The Institution of Naval Architects awards one scholarship annually of the value of £100 which is tenable for three years and may be held at any one of the three universities named Various shipbuilding firms give seven scholarships a year which are also administered by the Institution The Shipwrights Company also gives to the University of Durham one scholarship of £50 a year which is held at the Armstrong College Newcastle-on-Tyne this Company also gives prizes and other encouragements to evening class students

For the purpose of stimulating higher branches of study the Institution of Naval Architects has the disposal of three post graduate scholarships, which may be held for one or two years by students who have already graduated Two of these scholarships have an annual value of £200 while the third has a value of £100

It will therefore be seen that good provision is made to assist students to obtain a university education

The full regulations respecting training in the various higher institutions can be obtained from the Secretary of the Admiralty in regard to Naval Construction Cadetships from the authorities of the Universities of Glasgow and Liverpool, and from the Armstrong College of the University of Durham The particulars for the scholarships may be obtained from the universities and the Institution of Naval Architects W S A

NAVAL COLLEGES, ROYAL.—Naval cadets enter the Service between the ages of 12½ and 13, after attendance before an Interview Committee, a medical examination, approval by the First Lord, and a qualifying (not competitive) educational examination They are then admitted to the Royal Naval College Osborne, where they spend two years in the study of mathematics, physics, English, history, geography, French (or German), religious

knowledge engineering, seamanship gymnastics and drill The next two years are spent at the Royal Naval College Dartmouth where the subjects of study include also navigation (with charts and instruments) mechanics electricity applied mathematics chemistry, and optics At the end of the course the cadet takes the first part of the "Passing out" Examination and then goes to sea for two terms in a training cruiser—either H M S *Cumberland* or H M S *Cornwall*—where his education is continued on strictly professional lines After the cruise the second part of the "Passing out' Examination is held and on the results of the two parts taken together depends the seniority of the cadet who is now rated as midshipman and appointed to a battleship He is then 17 years old he serves three years as midshipman and at the end of that time has to pass for the rank of Lieutenant

The two colleges are naval establishments each being under the command of a Captain and each "term in charge of a Lieutenant Engineers R N are in charge of the workshops and teach engineering But in addition each college has a head master, and a large and competent staff of assistant masters and naval instructors

The necessary cost to a parent of a cadet s training is about £100 a year and parents have also to guarantee an allowance of £50 a year until the cadet becomes an Acting Sub Lieutenant (about 3¾ years after leaving Dartmouth)

The Royal Naval College at Greenwich is a place of higher education for junior officers naval instructors assistant naval constructors etc

The Royal Naval War College at Portsmouth is a staff college where flag officers captains and commanders study tactics strategy international law naval architecture coast defence wireless telegraphy etc

NAVAL CONSTRUCTION CADETS —(See NAVAL ARCHITECT THE TRAINING OF)

NAVAL CONSTRUCTORS — (See NAVAL ARCHITECT THE TRAINING OF)

NAVAL EDUCATION —The system of entry and training of junior naval officers is developed from that introduced in 1903 by Lord Selborne The New Scheme as it is still called differs in important respects from the old *Britannia* scheme Before 1903 entry to the *Britannia* was obtained as a result of a competitive examination at the age of 14½ after a years training in the *Britannia* naval cadets went to sea in a training cruiser The New Scheme brought down the age of entry to 12¾ which was taken to be the natural age of leaving preparatory schools this age was subsequently raised to 13½ It was considered that boys of this age could not properly be subjected to a competitive examination entailing presumably a previous period of "cram' the main test therefore, is an interview by a committee of four consisting of an admiral a naval captain a schoolmaster and one of the First Lord's secretaries This committee (together with the Medical Board) selects the most suitable of the candidates and if these can pass an easy written examination they are admitted to Osborne or to Dartmouth

Instead of one year in the *Britannia*, cadets now have five terms (one year eight months) at Osborne and two years at Dartmouth before they join the training cruiser In May, 1921, Osborne was amalgamated with Dartmouth the reduced numbers now under training not needing two colleges A vital feature of the new scheme is common entry for executive and engineering officers The *Britannia* trained only executive officers, engineering officers were entered at a later age and trained at Keyham Lord Selborne and his chief naval adviser (Sir John Fisher) considered that the Service would gain by breaking down the barrier of separate entry and training between the two classes of officers Accordingly the engineering officers of the future receive during their earlier years in the Navy a training identical with that of the executive young officers are allowed to branch off in one direction or another after one year s service as midshipman at about 18½ How this arrangement affects the early training will be explained later on

In 1903 it was intended that entry to the Royal Marines also should be via Osborne and Dartmouth This feature of the scheme has now been abandoned The demands of the Service for officers outran the supply coming from the colleges entry to the Royal Marines is now by open competition at the age of 18 The shortage of officers led also to the introduction in 1913 of a scheme of 'special entry from public schools and elsewhere About sixty candidates were entered annually through open competition at the age of 18 (as against 315 entered annually through Osborne and Dartmouth) Since the war these numbers have been reduced to 15 and 120 respectively These special entry officers proceed to a training cruiser stationed in proximity to naval establishments where training in professional subjects may be obtained After a year of this training the cadets go to sea as midshipmen with those who come from Dartmouth

There are two other narrow doors admitting to the coveted rank of Midshipman R N The school ship *Conway* which trains officers for the Merchant Service sends up a limited number of boys (one or two each term) who if qualified are admitted to Dartmouth without passing through Osborne The Nautical College Pangbourne has a similar privilege

Having described briefly the skeleton of the scheme we will proceed to review more in detail the regular Osborne-Dartmouth cruiser sequence of training

The "New Scheme" of Training The New Scheme established for all naval cadets a method of education widely different from anything that had existed before It was arranged to give the cadets what might be called a public school training on naval lines The four years (strictly three years eight months) at the two colleges together make up the equivalent of a public school education But the course differs from a public school course in essentials

In the first place though most of the teaching is given by civilian masters who are expert teachers the colleges are establishments where a naval atmosphere prevails naval discipline is enforced, naval ideas and traditions are imbibed At the head of each establishment is a naval officer of captain s rank Subordinate to him is a naval staff and a professorial staff The naval staff consists of a commander and five or six lieutenants an engineer-commander and five or six engineer-lieutenants a naval chaplain medical and accountant officers The commander is responsible to the

captain for the discipline of the college The lieutenants fulfil the function of house masters they take charge of the cadets when the latter are not under instruction Three times a year some 105 (40 in 1920) new cadets join Osborne these form a "term a unit for all purposes Each term is under a lieutenant and upon him is laid the duty of turning schoolboys into young naval officers He teaches them to be smart tidy and alert at all times to obey orders quickly and without question, never to sulk or be sorry for themselves

The professorial staff consists of a head master and a large staff of university graduates The head master is responsible for the instruction of cadets in all subjects except engineering seamanship and physical training

The games—an important element in the English educational system—are managed by officers and masters jointly under the immediate control of the commander

The Curriculum The colleges are not technical schools Naval cadets receive a liberal education But it is a liberal education focused upon their life s work One reason for the diligence and interest shown by the cadets may be this—that they can be made to see that each subject they study bears upon their future efficiency as naval officers

The subjects studied may be classified as technical linguistic and ' outlook subjects Technical studies take up considerably more than half the time but the other studies are regarded as quite essential to the education of a naval officer and within the time allotted to them are taught under favourable conditions It is intended to reduce the amount of time given to technical subjects and to increase that given to linguistic and outlook studies

Technical studies comprise engineering mathe matics physics and chemistry navigation seaman ship and signals Engineering is taught by engineer officers and instructors in large and well equipped workshops the greater part of the work being practical All naval officers thus acquire a funda mental knowledge of engineering which is held to be of value to them whether or no they specialize subsequently as engineer officers No one in a modern ship of war can get away from machinery Mathematics as studied at Osborne and Dartmouth has shed some of its academic dignity and broadly speaking is taught on the lines made familiar by the Mathematical Association Instruction in physics is partly classroom work and partly labora tory work new matter being as a rule presented in the classroom and reviewed later on in the laboratory At Dartmouth there is a short course of lectures on the chemistry of combustion explo sion rusting etc Navigation is taken up at Dart mouth and covered very thoroughly so that the cadet on going to sea is ready for the practice of this art Seamanship (including signalling) does not perhaps lend itself to treatment on shore but certain aspects can be dealt with in the colleges and at Dartmouth the landlocked harbour is an ideal place for boat sailing At one time cadets used to go to sea for a week at a time in a cruiser, but of late years no ship has been available

The languages studied are (1) English, and (2) either French or German Cadets entered since the armistice do not study German The object of the English course is to teach cadets (1) to express themselves in clear and simple language (2) to speak distinctly and clearly, and (3) to spell correctly, write neatly, and cultivate methodical habits in all work done on paper

English literature is, perhaps, rather an "outlook" than a linguistic subject The subject is not systematized at Osborne but at Dartmouth the cadets read aloud in class a series of fairly long selections of prose and verse from suitable authors What is attempted is to awaken in the boy's mind a taste for reading and, if possible a taste for reading literature

Each cadet takes up either French or German, and studies the same language throughout the four years It is expected that at the end of this time he will be able to converse fairly fluently and to write a letter in the foreign tongue, and that he will have laid a sound foundation for acquiring the power to read foreign books useful in his career Naturally these aims are attained more easily in French than in German

Other ' outlook subjects are history and geography The history course includes the salient features of world history in so far as these features have points of contact with our own history Naval history is studied in greater detail it provides an inspiration and a preparation for the study of war

Geography is studied at Osborne only, and time does not admit of more than a selective course It is taught on modern lines and deals with the British Empire together with North and South America and Europe—the latter studied broadly from a historical standpoint to illustrate the effect of geographical features on history

Training Cruisers On leaving Dartmouth, the normal procedure in peace time is that the cadets go to sea for some months in a training cruiser, or battleship

During this time they make either two cruises of about three months each with a break between or more usually a single cruise lasting six months The time spent on board the cruiser is entirely given up to professional instruction The usual routine of a ship of war is abandoned and the ship becomes a training establishment for the teaching of seamanship navigation and pilotage gunnery torpedo (including practical electricity) and engineering under conditions which make it a most valuable link between the colleges and the subsequent service as midshipmen Each cruiser takes all the cadets of a term and keeps the same group until they are ready to become midshipmen eight months later The instruction is given entirely by naval officers About one sixth of the whole time is given to seamanship one sixth to naviga tion one third to engineering one twelfth to gunnery one twelfth to physical drill, and the remaining sixth is divided between torpedo work and pilotage

The cruiser training is important alike as a supplement to what has been done in the colleges and as a preparation for what is to come The systematic training that the cadet receives gives him enough acquaintance with the rudiments of professional knowledge to take his place as a mid-shipman and to profit by the opportunities of self-training which service in that rank on board an ordinary sea-going ship presents A midshipman necessarily learns his work for the most part by doing it, the intention of the cruiser training is to give him the grounding that will make this possible

Midshipmen. On leaving the cruiser, the young officer passes from cadet to midshipman His age is now about 18, and he ceases to be associated

with the other youths who entered the Service at the same time as himself or rather he remains associated with only a very few of them The number of midshipmen in any one ship is usually about sixteen it rarely exceeds twenty five and of these at least half are midshipmen of greater seniority who play the part of mentors to those who have newly attained the rank The service as midshipman lasts for two years and four months at the end of which time examinations are held at sea in seamanship and navigation and if the young officer passes these he becomes an acting sub lieutenant

Later Training Sub lieutenants and lieutenants take various professional courses at Greenwich and Keyham An interesting feature introduced since the armistice is the course at Cambridge During the war the education of midshipmen at Dartmouth was much curtailed and in order that these officers may make up for their loss they are sent to Cambridge for a six months course There they live in colleges under the supervision of naval commanders, a captain being in charge of the whole organization Their studies are divided into a "specified course' for all and extra subjects among which each officer makes a choice The specified course includes Mathematics Physics Marine Engineering Navigation and a War Course In the extra subjects there are lectures on English Literature, Naval History Social and Political History, Psychology Modern Languages History of Geographical Discovery Ethnology Geology the Technical Application of Chemistry etc

NAVAL INSTRUCTOR—A naval instructor is a commissioned officer who is appointed to a ship to be responsible to the Commanding Officer for the scholastic instruction of both officers and men In ships which have no instruction officer this responsibility is borne by the chaplain

The duties of an instruction officer are—

1 To assist the specialist officers in the instruction of midshipmen

2 To assist other officers who desire to specialize

3 To give lectures to officers and men

4 To supervise the officers of the schoolmaster branch (see below)

5 To assist with his scientific knowledge in solving any problems that may arise

6 To carry out his duties in the fighting organization of the ship

Instruction officers are required before appointment to have an Honours degree in mathematics science or engineering to have had teaching experience, to be physically fit for service to qualify after a six months course in navigation physics applied mechanics and chemistry, and to serve on probation for at least eighteen months

Promotion is by seniority from the rank of Instructor Lieutenant to that of Instructor Lieutenant-Commander after six years service and to Instructor-Commander after fourteen years service After that promotion to the rank of Instructor Captain is by selection

The pay of an instruction officer increases from £1 per day to £2 12s per day and for Instructor Captains from £2 15s per day to £3 10s per day

Retired pay is calculated according to length of service and age on retirement Captains must retire at 55, Commanders at 50 and other officers at 45, but earlier retirement may be permitted The maximum retired pay is £900 for Captains, £600 for Commanders and £450 for other officers, the minimum may be reckoned as half the service pay applicable to the rank of the officer on retirement

It is to be noted that instructor officers are required to serve in any part of the world to which they may be sent A C C

NAVAL SCHOOLMASTER.—A naval schoolmaster is required before appointment to be a certificated teacher or to possess equivalent qualifications and to be physically fit for service He must have a good knowledge of mathematics and some knowledge of mechanics and electricity is desirable He may be required to serve on shore in a naval training establishment or on board a ship in any part of the world to which he may be sent

His duties are to give either general or technical instruction to men and boys of the Royal Navy

Before appointment he must serve for six months as a schoolmaster candidate, while going through a preliminary course and a further six months on probation His pay during these two periods is 9s 6d a day and 10s 6d a day respectively

After being definitely appointed he may look forward to promotion from warrant officer to commissioned officer his duties being those of schoolmaster or senior master or head master Promotion is not by seniority alone but by secommendation and selection Ability in the schoolmaster is rewarded by promotion to senior master and those who have served three years as senior master are eligible for promotion to head master with the rank of Lieutenant and after eight years of Lieutenant Commander The highest rate of pay for head master is £1 11s a day

Retirement comes at the age of 55 years or in special cases and for senior masters and head masters only at 60 years of age Retired pay is calculated according to rank and to length of service in that rank For a Lieutenant Commander the maximum retired pay is £350, and the minimum £300 while for the warrant officer who has never obtained promotion the maximum is £180 and the minimum £120 The retired pay of other ranks is between these two maxima and minima A C C

NAVIGATION IN ENGLAND, HISTORY OF TRAINING IN—Spain led the way in the training of sailors for naval enterprise discovery and commerce The Council of the Indies established a lectureship in navigation At the Contractation-house or Exchange in Seville a text-book of naval instruction had been published as early as 1510 The lecturer was required to prepare maps and navigation statistics and to instruct seamen and particularly officers in the principles of astronomy cosmography, and mathematics Spain supplied the earliest descriptions of the New World *e g* Peter Martyr's *de Orbe novo decades tres* (Alcala 1516) This was translated into English by Richard Eden under the title *Decades of the New World* and included accounts of travels by Oviedo y Valdés, Pigafetta etc Richard Hakluyt (*c* 1553–1616) followed Eden in publishing the great Elizabethan naval epic of the *Principal Navigations Voyages Traffics, and Discoveries of the English Nation* (1st ed, 1589, final ed, 1599) Hakluyt incorporated in his great work every work

bearing on his subject, whether in the Greek, Latin, Italian Spanish, Portuguese, or English languages When in residence in Oxford Hakluyt gave public lectures on geography, and claims to have been the first to show the new " lately reformed maps globes spheres," and instruments He pleaded for a naval lectureship, suggested by the lectureships at Seville, to be established in or near London

Holland produced the greatest pioneer in cartography in Abraham Ortelius, who issued the *Theatrum Orbis Terrarum* in 1570 (See GEOGRAPHY IN ENGLAND THE EARLY TEACHING OF)

The first lectures on navigation in England appear to be those of Thomas Hood in the house of Sir Thomas Smith in Gracechurch Street The East India Company secured Edward Wright for lectures on navigation in the chapel of Leadenhall

Establishment of the Science. But the first permanent endowment of lectures was that of Sir Thomas Gresham whose foundation of Gresham College from 1597 onwards, continued permanently a Professorship of Astronomy intended to help " in the advancement of marine causes " The professor was to expound the " principles of the sphere and the theoriques of the planets and the use of the astrolabe and the staff and other common instruments for the capacity of mariners which, being read and opened he still apply them to use by reading geography and the art of navigation " Gresham s foundation was followed by the establishment of the Chair of Astronomy at Oxford by Sir Henry Savile in 1619 The professor was required to explain " the rules of navigation as far as they are dependent on mathematics

In 1673 Christ s Hospital provided its mathematical school in which the pupils were to be instructed in " the art of navigation and the whole science of arithmetic ' On the model of this school many Blue-coats (and other coloured coats) arose in some of which ' navigation " was taught to enable boys to be prepared for sea service

The statutes of Woodbridge Grammar School (1662) require the master to fit boys to go to sea, if desired to do so

In 1707 the Plymouth Workhouse required their schoolmaster to teach boys the " art of navigation ' and its mathematical bases

Private commercial schools of the eighteenth century took up the teaching of navigation

In 1756 Jonas Hanway established the Marine Society to supply boys for the Navy, to be trained by an officer of the Navy and a schoolmaster

At seaport towns naval ' academies of varying proficiency in teaching of navigation arose F W

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CHADWICK, F E *Training of Seamen in England and France* (Washington, 1880)
PEARCE, E H *Annals of Christ's Hospital* (pp 99-134) (London, 1901)
PERKINS, PETER *The Seamen's Tutor*, explaining Geometry, Cosmography, and Trigonometry (London 1681)
WATSON, FOSTER *Beginnings of Teaching of Modern Subjects in England* (London, 1909) [See Index, under NAVIGATION]

NAVIGATION, THE TEACHING OF.—Navigation is the science of determining the path a ship must take in her passage from place to place it generally deals only with the open seas, coasting and river travelling being branches of *pilotage*

In a plan of instruction in navigation, decimal arithmetic must be the first step, the use of tables depending on this knowledge

The use of the symbols + and − to express quality and direction must be made clear, and logarithms should be taught, tables giving four or five figures may be employed, but Chambers's Tables are recommended

The following subjects come next—

1 **Geometry.** This should be practical, including the use of simple mathematical instruments

2 **Plane Trigonometry.** The solution of right-angled triangles by means of logarithms, questions dealing with heights and distances should form the groundwork

3 **The Spheres** (See NAUTICAL ASTRONOMY, THE TEACHING OF)

4 **Time.** (See NAUTICAL ASTRONOMY, THE TEACHING OF)

5 **The " Nautical Almanac "** (See NAUTICAL ASTRONOMY THE TEACHING OF)

6 **The Mariner's Compass.** (See NAUTICAL ASTRONOMY THE TEACHING OF)

7 **The Sextant.** The correct mode of using this is vital, and plenty of practice is essential The pupil must learn to use the artificial horizon, to find the index error, to adjust the index glass, and to read with the vernier He must then take the most important of all observations—the altitude of the sun at first without the chronometer Then he must apply corrections for refraction, parallax dip and semi diameter—all of which require diagrammatic explanation Daily, when possible, the altitude of the sun should be observed and corrected for errors one by one, do not permit the use of Table IX of Norie's *Epitome*—that may be used later The latitude should then be determined by taking out the declination from the *Nautical Almanac* The pupil should be warned against confusing mean and apparent time

8 **The Chronometer** is the instrument for finding mean time the mode of comparing chronometers, and of estimating their errors and rates, must be taught The extended use of the sextant and thermometer falls under the head of Nautical Astronomy

9 **Charting, etc** The subject of charting should now be considered The plain slate sphere used in earlier lessons should again be employed Fix poles and draw meridians equator, and circles of latitude, let the pupil copy the Eastern Hemisphere on this slate sphere from the terrestrial sphere Now let him try to project the Eastern Hemisphere from the terrestrial sphere, using meridians and parallels of latitude, on to a sheet of paper He will appreciate the difficulties from the start Now explain Mercator s Projection, and point out its two great advantages—

(1) The course of a ship is represented on it by a *straight* line,

(2) This straight line makes the *same* angle with every meridian

The construction of charts may be followed by a few lessons on the shape and magnitude of the Earth The flattening at the poles can be appropriately impressed by graphing recorded pendulum experiments, and by the variations in length of degrees of latitude

Preparatory to lessons on the sailings, the mode of estimating a ship's rate of sailing is to be explained, and the difference between a *knot* and a *nautical mile* to be well grasped.

The terms "lee-way," "dead reckoning," "set and rate of currents" "port tack" "starboard tack," "course" "distance and departure' should be well taught Show the pupil the form in which a ship's log-book is kept

Now introduce the Traverse Tables and show that apart from differences in latitude and longitude, the Table may be used to solve any right angled triangle Variation and deviation should come now to make changes from true N to compass N and *vice versâ* and correction of courses is the next step Every example should be worked from a diagram in which the lines are named and the included angles marked in degrees

10 **The Sailings.** (1) PLANE SAILING In this method of computing the change in the ship's position, straight lines represent the circular arcs of actual movement yet there is no material error for *short* distances Sketch the right angled triangle in every example 'Compound courses naturally follow and this is *traverse* sailing Always sketch the changes in position and name the parts of the diagram Let the pupil compare the results he obtains from his working by triangles with the result he can obtain by inspection from the Traverse Table

(2) PARALLEL SAILING Explain this method but show that as a check on plane sailing it is no longer needed in consequence of the better construction of charts and the accurate determination of longitude by chronometer

(3) MIDDLE LATITUDE SAILING Explain the cases relating to it and show that it is better adapted for courses nearly E and W

The pupil should be able to prove the two formulae required viz —

(i) Tangent of Course
= diff of Long × Cos Mid Lat / diff of Lat

(ii) Distance
= diff of Lat × sec Course

(4) MERCATOR'S SAILING Draw the distinction between ordinary difference of latitude and "Meridian difference of latitude For *small* distances the pupil will note that the course on a *plane* chart is identical with that on Mercator's

(5) The teaching of Great Circle Sailing may well be omitted

11 Explain what a 'sea journal" is have the *log board* used and the particulars written up in log book form Let the pupil know that the computation of the ship's position is made daily at noon from those particulars and that the operation is called "working a day's work' The ascertained position is then *pricked* on the chart and compared with the place as determined by observation J E E

NAVY LEAGUE, THE—A British Voluntary Patriotic Association entirely outside party politics desirous of rendering the greatest service of which it is capable to the Empire particularly in connection with all matters concerning the sea All the influences at its command will be used to support a conference between Britain and the United States of America with a view to creating an International Naval Agreement whereby the maritime trade of all countries shall be protected and the competitive building of ships of war may cease Every effort is made to assist in the health, welfare, and happiness of the officers and men, and their dependents of the Royal Navy and Mercantile Marine in any way in its power It endeavours by lectures and lantern slides to teach all school children the true meaning of the SPIRIT OF THE SEA and its influence on the proper use of SEA POWER It awards certificates of merit in all elementary and secondary schools in the Kingdom to the writer of the best essay on sea subjects selected by the respective head teachers Public lectures are arranged on sea matters hoping thereby to build up in course of time a body of public opinion well qualified to pass a considered and informed judgment on matters of sea polity as they arise It organizes Sea Cadet Corps wherever possible in order to help those boys who desire a sea career to become good seamen and in any case to learn discipline duty, and self respect The League owns or has affiliated to it a few small training ships for training boys for the Royal Navy and Mercantile Marine, and hopes to add to the number of these ships

THE NAVY LEAGUE OVERSEAS RELIEF FUND which provides for the relief, education and advancement in life of all dependents and children of all seamen who lost their lives or became permanently incapacitated by reason of the Great War, is administered by the League

Branches or county units are organized throughout the Empire to spread the knowledge of the history and tradition of the Sea Services and generally to further the objects of the League

The head office is at 13 Victoria Street, London S W 1

NAVY, THE TRAINING OF BOYS TO ENTER THE ROYAL.—The first care is to see that the boy possesses the qualifications demanded by the Regulations for the admission of boys to H M Navy There must be no defect in sight or hearing no physical defect of any sort

The present physical standard is—

Age			*Height*		*Chest Measurement*
			ft	in	in
15¼ and under		15¾	5	1	31½
15¾		16	5	1½	32
16		16½	5	2	32½
16½		17	5	2½	33

Satisfactory proof of age must be produced The boy's character must be good no one is received who has been in a reformatory or prison The educational standard for mere admission is not high the four rules (simple and compound) easy dictation and reading from an easy book are all that are necessary A much higher standard is set for boys wishing to get special training with a view to future promotion By the time a boy is 14 a fair estimate can be formed of his qualifications and his education should include special subjects of advantage to him in the Service

He should have plenty of drill and *regular* physical exercises, he should learn to swim and know something of life-saving drill A course in seamanship will be of great use the following is a syllabus of proved value The references are to the *Manual of Seamanship* (Vol I) published by H M Stationery Office

1 **Semaphore** (pp 38–40) Aim at sending and receiving correctly six words a minute

2 **Flag-waving** (pp 40–46) Pay strict attention to the position of the body when signalling Use slates for taking in

3 **Compass** (pp 171–179) Learn to box the compass in points and quarter-points Know the degrees for any point and the number of degrees between any two points

4 **Bends and Hitches** (pp 68–85) Omit Marlinespike Hitch Rope-yarn Knot Midshipman s Hitch and Carrick Bend

5 **Knots and Splices** (pp 86–97)

6 **The Helm** (pp 179–187) Understand the wheel and tiller and how to work the helm under orders

7 **Rule of the Road** (pp 257–260) The use of *special* lights need not be learned

8 **Lead and Line** (pp 139–142) Provide 50 yds of 1½ in line with a long eye splice at one end and from this end have the first 20 fathoms marked as given on page 139 of the *Manual*

Drill can be given by extending the line on the ground and getting the boy to run and take up his position at the mark on the line as any particular sounding is called Do not attempt to teach *heaving* the lead on land

9 **The Buzzer** This is specially useful for boys who intend to take up wireless telegraphy A dry cell of low voltage and a small electric bell with the button off the striker are all that are necessary Have the Morse code thoroughly learned, and the boy will soon learn to receive and send out

Unless the services of a competent signaller are available it is advisable not to attempt instruction in the naval code of signal flags and in flashing lanterns

In the ordinary school work attention should be paid to correct spelling—an important matter for the signaller Arithmetic should include percentages accuracy is essential

The study of a simple yet practical book of navigation will prove of much value to the boy later on when he takes the examination for War rant Officer or for Mate such a book say as Arnold s *Steamship Navigation*

How to Join When the boy has reached the prescribed age for entry at present 15½ send him to the nearest recruiting officer who will see that all the preliminaries are observed and will have a medical examination made of the boy s fitness

Apply at the nearest post office for a pamphlet entitled *How to Join the Royal Navy* in it will be found those naval ratings open to the boy, as also the inducements in the way of pay and promotion which will reward his diligence and good behaviour If accepted by the recruiting officer the boy will be sent to the naval establishment at Shotley to H M S *Powerful* or to H M S *Impregnable* His first day is taken up with visits to the doctor the head schoolmaster and the dental surgeon finally the commander interviews him and has him rated as a Boy (2nd Class) in the Royal Navy If he has taken the course of instruction advised in this article he will within three months be placed in the Advanced Class for a further course of study embracing algebra mechanics electricity and navigation When he leaves this class with a special note on his certificate he has begun to climb the Royal Naval ladder J E E

NEANDER, JOHANN AUGUST WILHELM (1789–1850) —Born at Göttingen and educated at Hamburg became distinguished in literature and philosophy, and entered the University of Halle as a student of theology At the age of 23 he became Professor of Theology in the University of Berlin, and from that time for thirty eight years was one of the most prominent and popular teachers in Germany The fame of his lectures and his personal attractions drew many students from France, Britain and America His theological writings are very numerous, and many have been translated into English

NECKAM, ALEXANDER.—(See ANGLO-NORMAN IN ENGLAND, THE USE OF)

NEEDLEWORK, THE LONDON INSTITUTE FOR THE ADVANCEMENT OF PLAIN.—Founded in 1878 this institute became a public body under a scheme of the Board of Education in 1905 Among the governors are educational experts, representatives of the London County Council and of the University of London Examinations are held for teacher s certificates and diplomas three times a year in needlework and twice a year in dressmaking Work sent from schools, institutions, and also from scholars under private or home tuition is examined three times a year, and scholar s certificates are awarded

The offices of the institute are at 92 Victoria Street London S W 1

NEEDLEWORK, THE TEACHING OF.—The word "Needlework or "Needlecraft," to use the more modern expression embraces the cutting out and making up of undergarments and children's clothing patching darning and renovating, but, although differing in character knitting is generally included as part of a needlework scheme and with limited restrictions simple crochet work and embroidery are sometimes taught Unlined blouses and skirts are also frequently made in the more advanced classes

It is proposed here to deal with the subject from a broad standpoint so as to be helpful to every needlework mistress Since the passing of the Education Act in 1870 needlework has been a compulsory subject in elementary schools, and many changes have taken place The subject was made compulsory in training colleges in 1882 and in grant aided secondary schools in 1906 although there are at the present time several of these in which the senior scholars are deprived of systematic needlework instruction

A well arranged and carefully graded scheme is imperative The Board of Education gives a freedom (subject to approval) in the plan of work, so that every mistress has the privilege of framing a scheme and working out a syllabus consistent with the conditions and local circumstances of the pupils It is this freedom of action for which teachers have begged for many years and full advantage should be taken of the concession The views of the Board of Education on needlework instruction are embodied in Circulars Nos 719 and 730 The sentiments and moral tone are excellent in principle—we could but desire that time and other circumstances enabled the ideals to be carried out more completely

Schemes of Work. In planning a well balanced scheme, clearness of outline is important, so that no vague expressions shall find a place—in short, the scheme must be practical A "scheme of work," therefore is a plan in outline—actually a skeleton—of which a "syllabus" forms the muscle and nerve

force, hence the latter becomes a summary of *each section* of a scheme The *details* of the syllabus are dealt with in the lesson The growth is shown thus—

Scheme = outline of work
Syllabus = leading features of scheme
Lesson = details of syllabus

A scheme for elementary schools must include work for scholars from 7 to 14 years of age for secondary schools from 10 (or less in a kindergarten) to 16 or 17 for a training college for elementary teachers over 18 years for schools of domestic subjects any age above 18 years and for pupils attending technical institutes or evening continuation schools any age over 14

The first consideration in any plan must be that of ' time consistent with other subjects *as a rule, not less* than 2½ hours per week in two periods for elementary and 1½ hours for secondary school pupils with a reasonable amount of homework for elder girls which will enable them to gain credit for unaided work Some section of needlework should be encouraged as a hobby or for leisure hours (*e g* crochet, knitting, design embroidery or other forms of handwork that will cultivate artistic taste)

Training college students are usually allowed a class lesson of 1½ hours, and about 1½ hours preparation per week in addition to school practice lessons

Schools of domestic subjects follow an intensified course covering *about* 1½ terms of 20 hours per week and on passing the Diploma examination students are qualified as special teachers

First Steps in Teaching Whether young children have to be taught or adults it is most important to emphasize the *correct* handling of the materials and implements but in what form this instruction is given matters little providing *the result* is gained Older teachers will remember that children used to be taught to hold the implements by working through a series of steps called drills which is now an obsolete term The stereotyped form of drill has been very much misinterpreted and it is advisable to speak of these actions as stages in working ' initiatory movements ' or steps in teaching the object being to enforce a *free* position of the hands material and implements and to learn the propelling power of the thimble for without this no good progress can be made or speed acquired Of late years some enthusiasts have wished us to believe that young children should hold work in any way but experienced teachers know that such a principle is as retrograde in needlework as it would be for a pianist or violinist to ' finger ' incorrectly

Consideration of Eyesight School doctors advise that very young children should not work on dead white material especially white canvas where threads are likely to be counted Red materials and red cotton and wool should be discarded as they prove irritating after a short time Colours specially recommended are green brown cream pale blue and pink Working by artificial light is deprecated but if unavoidable a steady lamplight with a green shade which will throw the light down will enable a worker to sew comfortably for hours If possible the light should fall from the left side, or the back Needlework is invariably held too close to the eyes this is merely a bad habit and a good posture should be insisted upon The scholar should sit upright but with the head slightly bent forward and with both feet on the foot rest The work should be held 5 or 6 in from the chest and about 10 in from the eyes, though this depends upon the length of the forearm

Stitches should vary in size with *the age of the worker and the texture of the material* Working either *very* large or *very* small stitches is difficult Beginners may generally be expected to make about 6 or 7 stitches to an inch in hemming and ordinary longcloths, casement cloths zephyrs and prints allow about 8 or 9 stitches to an inch without any undue amount of coarseness or fineness though it is the *spirit* of the figure which is intended to be kept A long piece of cotton should be avoided the length of the worker s extended arm is a useful gauge

Points of Controversy Teachers used to think it necessary to fix children s work and many hours of leisure were thus spent to-day fixing is regarded as an essential detail of garment-making and if a scholar cannot fix the parts of the garment being made it has been unwisely chosen Instruction must be given in fixing and awkward parts may need manipulation but speaking generally the fixing should be done by the worker

Specimens samples test exercises practice pieces are names by which preliminary teaching is known and they are the right things to be done at the right time and place but formerly specimen work was much abused and consequently its educational value small unless the stitch or process taught was practically applied If usefully employed a sample of work to be reproduced forms a ready means of teaching All skilled workers especially those who do the daintiest needlework invariably practise before applying anything new to valuable material This is the *use* of the ' specimen but to continue aimlessly practising the same type of work and ultimately destroying it is very reprehensible If asked ' Do you still use specimen work ? reply ' Decidedly if the work requires it and it is consistent with *common sense and judgment* "

What constitutes fine needlework ? A misapplication of needle and thread on material of a certain texture so that the work is out of character for the purpose intended Fine needlework is unpractical and should not be expected in any school

Working by threads should *never* be countenanced obviously this does not apply to embroidery where drawn threads constitute the principal feature but even here eye gauging is often resorted to

Cutting-out and Construction of Garments and Other Articles. Many good needlewomen have frequently not sufficient experience to *cut out* successfully This often arises from a want of knowledge of the proportion of the relative constituent parts of a garment or lack of forethought in planning a pattern on material and want of confidence with the scissors

One of the following plans of teaching cutting-out is usually adopted (1) Direct measurements from the actual wearer—the most intelligent plan but only suitable for advanced workers (2) Drawing to a scale of proportion and shaping the pattern accordingly (3) Folding certain definite creases in the paper and drawing the pattern proportionately to the folds—generally a very easy plan for young workers, and one suitable for figures of average size (4) Adapting or modifying a paper pattern (This is the method invariably adopted by home workers , but to alter a given pattern to suit any individual requires intelligence and power to plan and contrive)

N B Pupils should be trained to observe the different proportions of the figure—this is the keynote of success

The *one* garment per year which was customary under the old " Code for Elementary Schools " has given place to a more rapid and up-to-date system Smaller articles in great variety should be chosen but perfection in the mechanical stitchery should not be expected to the same extent Elder girls require experience in dealing with garments of different materials If a pupil is to develop self-reliance and resource it is essential that the class teacher should have ample opportunity for personal supervision which is impossible with a large class Thirty pupils are as many as one teacher can superintend satisfactorily and twenty if the work is advanced

Children should begin cutting out when quite young and directly they are able to measure and fold A level surface is necessary to ensure good work while correct handling of material and scissors is important

(The left hand should be *flat* on the pattern and the scissors' blade rest *on* the desk or table Too frequently children cut in the air with deplorable results)

It is inexpedient to say precisely what garments should be taught as circumstances differ widely and the conditions of home life may vary to such an extent that clothing of a more hygienic character and woven web underwear may take the place of hand- or machine made cotton garments

In arranging a scheme for teaching cutting out consideration should be given to careful grading so that new features are presented in order of difficulty *e g* (1) Simple small articles for personal home or school use involving the cutting of squares oblongs triangles and easy curves Bags (of *various* shapes) for knitting needlework cottons brush and comb nightdress shoes etc Handkerchief and glove cases hair tidies calendar cases pockets, book covers curtain ties bibs or feeders pin cushions pencil cases sleeves (to be worn when at needlework) (2) Pinafores aprons chemises (opinions to-day differ as to the advisability of cutting this garment but *young* children invariably wear chemises and the knowledge of the shaping is most helpful in cutting other garments with similar curves or of the Magyar type) (3) Children s flannel petticoats with attached bodice (4) Knickerbockers for children and girls (5) Overalls and other styles of yoked garments of the tunic variety (6) Princess petticoats for children and girls (7) Camisoles for girls and women—shaped bands (8) Knickerbockers for women (9) Combinations and sleeping suits (10) Nightgowns (11) Blouses (unlined) (12) Skirts and upper petticoats (13) Baby clothing

N B The cutting out and making of dolls clothing and articles for a doll s house may be included early in the course if desired

If education authorities would provide rolls of paper for the upper classes similar to that used by many drapers, it would be a valuable means of teaching the " lay ' of a pattern on material and would help to develop self-reliance and practical application For instance, suppose a camisole has been drafted and the teacher requires to show the class how to place the parts on material having due regard to the correct way of the selvedge, the roll of paper could be used, and the several sections might be pinned as they would be on material The quantity required could also be measured and the amount noted Other garments could be dealt with in the same way

The method of teaching lays of patterns *to scale* gives scope for much intelligent work Quarter-size patterns can be drafted by a class, while 8 or 10 sections can be cut at the same time if thin tissue is used The pattern should be pinned on contrasting paper representing material to the same scale, and hems turnings and necessary fullness allowed for with attention to economical placing

Space for Cutting-out. In some schools, little accommodation for cutting-out is available Improvised table space is afforded by placing blackboards —covered with paper—across two desks This means that the teacher must consider the planning before the lesson but it is not of very frequent occurrence and any trouble is amply repaid Trestle tables with collapsible legs are most useful, and in several schools where a hall is accessible, the use of these is advantageous The ordinary desk handicaps teaching and only patterns which the scholars can handle easily can be taught Opinions differ as to the advisability of cutting half-size patterns though for economy in paper and space they are sometimes taught The educational value of such work is very small and proportion cannot be taught intelligently

In all except elementary schools, a special room suitably equipped with table space, cupboard accommodation and convenience for demonstrating should be provided, as needlework cannot be successfully taught without facilities for dealing systematically with the work

Choice and Care of Materials Material for garments must be chosen with regard to home circumstances and the suitability of material with width, price and special characteristics indicated Samples of the principal materials and trimmings used for clothing should be conspicuously exhibited in the classroom Makers and prices of the various items of haberdashery might be discussed during the lessons as pupils thus acquire general knowledge Casement and similar cloths are admirably suited for beginners Many colourings of these materials are very effective and if fine embroidery cotton is used in the making and decorating useful and pleasing work can be carried out

All calicoes and longcloths should be soft in texture Zephyrs, ginghams, tobralco, and similar materials are well suited for overalls and pinafores but cambric madapollam and tarantulle for superior underclothing Flannelette is largely used in certain schools Soft even threaded flannels are best adapted for garments and the cotton and wool mixtures, such as wincey viyella and similar fabrics have much to recommend them

Trimmings must always be in keeping with the material *e g* Swiss embroidery lends itself pleasingly to all white cotton materials, and Torchon lace (obtainable in many qualities) is admirably suited to dainty underclothing Crochet and knitted edgings form inexpensive trimmings, while simple embroidery of suitable design is possible for expert needlewomen

Education authorities should provide suitable accommodation for material and garments kept at school Cupboard room, baskets, and large boxes are necessary for elementary schools while, in addition, for secondary schools and colleges, a desk, locker or suitable space should be allowed

Every care must be taken to preserve the

freshness of needlework, wrappers bags, apron and sleeves are necessary, and the importance of *thorough* hand-washing and not touching anything but working materials are habits which cannot be inculcated too early Sewing materials and implements have a most unfortunate propensity for getting untidy and by precept and example the teacher must be ever alert to check untidiness and to encourage the neat methodical worker Every scholar should have a receptacle (bag box basket or case) for holding suitable haberdashery and implements There are good moral lessons to be learned from these apparently small details

Stitches used in Making Garments Certain definite rules exist for the various stitches They were formed by old established customs and are the outcome of carefully considered methods and are generally taught in progressive difficulty (*e g* tacking running hemming sewing etc)

The principal stitches may be grouped thus (1) Neatening raw edges Hemming felling herring boning buttonholing overcasting scalloping (2) Joining purposes Sewing running back stitching (3) Disposing of fullness Gathering pleating tucking, whipping (4) Ornamenting or decorating Feather stitching knotting marking stitching etc

Decorative stitches can be formed by a combination or modification of simple stitches if judiciously worked with well chosen threads contrasting with the material This type of work gives a distinctive touch to garments and other articles The possibilities of decorative stitchery are almost limitless for simple borders and trimmings and these can be made by *all* workers The eye is trained in carrying out the design and aesthetic taste developed in the choice of threads and suitability of the pattern All needlework teachers should be conversant with the principles of design which form the foundation of many types of art Such stitches as running cross stitch V stitch diagonal stitch buttonholing (with its many variations) herring boning can all be suitably and ornamentally arranged Satin outline and chain (in various styles) are often considered embroidery stitches and their use is now quite general in ornamental schemes

No decorative work must be allowed unless the plain needlework is creditable and much discretion is necessary for the decoration not to be overdone but *suitable in character and place*

Machine Work It is imperative that older girls and students should be taught the use of a sewing machine but a machine will not *make* a garment without skilled hands any more than a kitchen range will cook a dinner without regulation of heat

Machines differ in construction according to the maker but in the main all lock stitch machines have certain features in common affecting tension spring thread guide presser foot spool shuttle and threading apparatus

It is essential that machines should be kept absolutely free from dust well oiled with the steel portions polished The simple mechanism of the machine should be taught *before* it is used and in actual working there should be a *graded sequence* of difficulty

Good work is characterized by a fine stitch (consistent with the material) a straight regular line absence of puckering with awkward parts of the garment showing careful management and secure finishing throughout The value of firm tacking is most important until experience gives confidence of hand control It is impossible to instruct more than six scholars simultaneously, so that some organization of the remainder of the class must be made

Mending and Renovating. This section of needlework is probably the most difficult to deal with, but its importance cannot be overvalued The 'four sided' patch should only be used as a preliminary practice for giving experience in the removal of worn out material A practical course must deal with garments or house-linen and the difficulty of obtaining such is great The garment must be *worth* mending It does not show a judicious use of time to mend a garment which is comparatively valueless merely for the *sake* of mending Poor people are very diffident about letting outsiders know that they possess ragged garments Parents in better circumstances are also reluctant to *lend* garments for repairing so that the teacher is handicapped Many mistresses endeavour to make mending of practical use by leading girls to realize that to have untidy garments shows lack of self respect *Collective* class mending should be encouraged When the worn garments have been chosen the necessary repairing can be discussed and the work proceeded with by easy stages in which several scholars may take part each in turn being responsible for the carrying out at home of the mending allotted to her so that the next step in the demonstration may be explained and the process worked by another pupil This teaches a variety of methods and gives a good general acquaintance with typical plans but it is not ideal because it lacks the essential *personal interest to the individual worker* Several garments might be under repair and thus some good methods of renovating selected The cutting down of worn garments to make other types of clothing is a valuable means of inculcating thrift

Knitting As a school subject knitting has distinct advantages (1) It can be taught to very young children without producing any undue eye or mind strain and any weariness of the hand soon wears off as proficiency is acquired Many pretty useful and inexpensive articles can be made as soon as a child can knit plain and purl and cast on and off (2) Knitting gives occupation for odd moments and senior girls may be encouraged to knit or crochet trimming for underclothing edgings etc from printed directions This affords excellent practice and cultivates self reliance (3) Every girl should be capable of knitting a sock or stocking and know the proportions of the parts A pattern sock with divisions marked is valuable for teaching and a simple scale of sizes should be written for future use (4) Knitting gives intrinsic pleasure to invalids and the aged (5) Knitting helps to develop the sense of touch and gives a flexibility to the muscles of the hand

N B The correct position of the hands wool and needles is vitally important otherwise successful work is impossible and it is obvious that knitting requires to be practised in youth if dexterity is to be attained in middle age

Methods of Teaching A good needlewoman is not necessarily a good teacher of the subject A technical training is required for teaching and a general knowledge of the fundamental principles underlying all handicraft subjects Needlework should be taught by class demonstration interest aroused by preliminary discussion and stitches and processes shown on a *large* sample of inexpensive material with *coarse* bright contrasting wools or threads,

and needles of proper relative size The value of the blackboard in demonstrating must be appreciated It is not necessary to be an artist to illustrate a lesson suitably The ability to use chalks freely in *bold telling* diagrams can be acquired Large diagrams on brown paper prepared previously are of great advantage *but should not take the place of the telling sketch* (accompanied by brief notes) which should be progressively *built up*

Every blackboard scheme and portion of apparatus in demonstrating must be sufficiently large for the pupils at the back of the class (or 20 ft away from the blackboard) to see All apparatus should be prepared by the *teacher* and it is advisable to keep work of this character in various stages

The materials shown in the next column lend themselves to demonstration work

Other means of illustrating are—

(*a*) Finished garments suitable in character for the work and of such a nature that the scholars can understand the construction If possible the garment should be fresh and show good sensible workmanship

(*b*) Another garment should be available for the scholars to handle freely

(*c*) In a cutting out lesson a full-size paper pattern of the garment and the lay on the material or contrasting paper In needlework a *section* of the garment may be shown as a means of teaching construction and part of the section worked and part pinned

(*d*) Samples of suitable materials (with width and price) for the garment should also be shown

Qualifications of the Teacher The elementary teacher should have received a graduated course of instruction and have gained the ability to teach according to good methods

The secondary teacher should possess a diploma from a recognized training school of domestic subjects or from an institute of needlework Under no circumstances should an untrained mistress attempt to teach this subject and it is a great advantage if the mistress has artistic taste and knowledge

The training college mistress needs a very wide experience The ideal training should include a thorough practical knowledge of elementary and secondary school needlework added to which the mistress must be able to give expert advice respecting the most up to date methods

Recognized Certificates and Diplomas A list of colleges of domestic subjects granting diplomas in needlework can be obtained Each school issues its own prospectus and grants diplomas after successful examinations in theory teaching and practical work

The London Institute of Needlework 92 Victoria Street London S W 1 grants certificates and diplomas on similar conditions to the training schools but the Institute (the pioneers of the entire needle work system of this country and to which the Board of Education gave recognition in framing its code or schedule) is only an *examining* body The Institute also undertakes the examination of scholars' work

The City and Guilds of London Institute (*q v*) conducts examinations in July for teachers desiring to qualify for the Evening School Teachers' Certificate

Some discretion needs to be exercised respecting the selection of text-books but standard works by writers of practical experience may generally be relied upon to teach actual facts—the alphabet of the subject

In cutting out, every enthusiastic teacher should be able to work out and adapt from the *simple* patterns a series of up to-date drafts, which will always meet the demands of the constantly changing style of garments these alter very slightly in *general* principles

	Material	*Suitability*
1	Hessian or brown sacking canvas of a soft, loose texture	For illustrating the majority of stitches and processes
2	Coarse towelling or dowlas	Do
3	Coarse unbleached calico	Do
4	Coloured glazed lining or linenette or casement cloths	Suitable where contrasting colours are needed
5	Coloured flannelette	For any stitch or process in flannel or woollen material
6	House flannel or floorcloth	Do
7	Cretonne with a decided pattern	To represent any process in print
8	Striped gingham Oxford shirting or similar material	To teach selvedge and weft and crossway cutting and joining
9	Swabs (procurable from a Penny Bazaar or drapers)	For darning
10	Tape webbing cheap ribbon (not less than 1 in wide)	For tying binding or neatening purposes
11	Wool or yarn (fleecy, rug or the British substitute for Berlin wool)	For use on any materials, for apparatus or for teaching knitting
12	Cotton cord or upholsterer s cord	For knitting
13	*Thick* threads or silk substitutes	For any purpose of demonstration

	Implements	*Suitability*
1	Needles (steel)— Chenille carpet darners packing rug sail	For use with any materials
	Needles (wood or bone)	
	Knitting pins may be converted into needles by removing the knob and tapering the end	For teaching knitting
2	Pins (coloured glass-headed of various lengths)	For fixing materials of any kind
3	Hooks and eyes (large)	For use in teaching fastenings
4	Coarse millinery wire (flat or round) may be shaped to represent hook and eye	
5	Cardboard (cut in circles) is a good substitute for buttons	

Teachers hold an immense power of influence on the future women of the country who need *while young*, to be taught the value of womanly crafts and to be trained to become skilful and deft-fingered This is the task to face, and with a determination endurance and stability which should form the soul and spirit of the teaching profession A K S

References—

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CHAMBERLAIN, A R *Practical Plain Needlework*
CLAYDON, E P AND C A *Needlework without Specimens Knitting and Crochet without Specimens*
HAMBRIDGE E R *Blackboard Diagram Drawing for Teachers of Needlecraft*
ROBINSON, R *Aims and Methods of Teaching Needle work*
SMITH, AMY K *Needlework for Student Teachers Cutting out for Student Teachers*
SWANSON, M , AND MACBETH, A *Educational Needle work*
SYNCE, M B *Simple Garments for Children Simple Garments for Infants*
WALLBANK, E AND M *Dress Cutting and Making Children s Garments*

NEEF, JOSEPH (1770–1854) —Described in his *Plan and Method* of *Education* (1808) as ' formerly a coadjutor of Pestalozzi at his school near Berne ' He established the first Pestalozzian schools in America had spent three years with Pestalozzi as a gymnasium instructor (1799–1802) opened a school in Paris (1803) and under the patronage of William Maclure an American philanthropist opened one in Philadelphia He continued his educational work in Kentucky Indiana and Ohio opening and conducting schools in which he followed the methods of Pestalozzi His *Plan and Method of Education* is " founded on an analysis of the Human Faculties and Natural Reason and in his introduction he gives the keynote to his system ' The unfolding of the natural faculties is the real object of education or rather education itself Neef taught young children orally using few or no books he gave lessons on Nature in the fields and he proceeded by ' slow steadiness ' from the known and plain to the unknown and complicated

NEGRO EDUCATION IN U S A —Although more or less intermittently there was prior to 1860 some effort to educate free negroes and in some few instances slaves the general education of the negro in the United States did not begin until 1861 the first year of the war between the Northern and Southern States As soon as this war started refugee slaves began to escape from their masters and come within the lines of the Northern (Federal) armies

The first school for these freedmen was established by the American Missionary Association at Fortress Monroe Virginia on 17th September, 1861 and here the first experiment among the freedmen in industrial education was made Out of this experiment grew the Hampton Normal and Agricultural Institute of which the Tuskegee Normal and Industrial Institute is an offshoot As the war progressed the number of refuge freedmen increased so much that special provision had to be made for them and the United States Government undertook to provide facilities for their education Benevolent agencies, missionary boards, etc , co-operated with the National Government in this effort

After the Emancipation Proclamation of 1st Jan., 1863 negro schools were established in all parts of the South occupied by the Federal armies In Virginia North Carolina South Carolina Tennessee, Arkansas, and Louisiana, these schools multiplied

The United States Congress of 3rd March, 1865, established the " Bureau of Refugees, Freedmen, and Abandoned Lands This Bureau was attached to the War Department, and was to be maintained throughout the war and one year thereafter It had the supervision and management of all abandoned lands and the control of all subjects relating to refugees and freedmen The education of the freedmen became one of its special objects The Bureau was discontinued in 1870

In five years the Bureau established 4,239 schools, employed 9 307 teachers instructed 247 333 pupils and expended for education $3 521 936 , the benevolent associations co-operating with the Bureau expended $1 572 287 In addition the freedmen raised and expended $785 700 Higher education for the negro was begun under the auspices of the Bureau It assisted in establishing the following institutions Atlanta Baptist College, Atlanta, Georgia Atlanta University Atlanta Georgia, Biddle University Charlotte North Carolina, Claflin University, Orangeburg South Carolina, Fisk University Nashville Tennessee Howard University, Washington D C Rust University, Holly Springs Mississippi Scotia Seminary Concord North Carolina Shaw University Raleigh, North Carolina Straight University New Orleans Louisiana Talladega College Talladega Alabama Tougaloo University Tougaloo, Mississippi

In 1875 public school systems which included the negroes had been established in all the former slave states The first report of enrolment in these public schools is for 1876–1877 when 1 827 139 white and 571 506 coloured children were enrolled

During the year 1917–19 in the former slave states 2 000 000 negro children were enrolled in the public schools The number of negro public school teachers in these states is 36 585 In 1914 the United States Commissioner of Education reported 161 public high schools for negroes with 338 teachers and 11 770 students In 1910 there were 2 277 731 illiterate negroes in the United States The percentage of negro illiterates 10 years of age and over was in 1880 70 0 1890 57 1 1900 44 5 1910 30 4 In urban negro population the percentage of illiterates in 1910 was 17 6 in rural population 36 1

At the Census of 1910 there were, in the United States 9 827 763 negroes, or 10 7 per cent of the total population The total population of the former slave states in 1910 was whites 20 547 455, negroes 8 749,427

Modern Tendencies The general tendency of the present policy with reference to common schools for negroes is (1) to improve facilities (2) to exercise a more efficient supervision (3) to make the teaching more vocational and (4) to bring the school besides its regular teaching work, to assist actively in the general improvement of the community The chief supervising agencies for negro common schools are the State and county boards of education, the Jeanes' Fund and the General Education Board The last named helps to provide State supervisors of negro rural schools, and so far has done so for Virginia, North Carolina, South Carolina, Georgia, Florida, Alabama, Arkansas, Louisiana,

Texas, Kentucky, Tennessee, and Mississippi The Jeanes Fund provides county supervisors for negro rural schools, and in 1915 did so in 134 counties belonging to the following States Alabama, Arkansas Florida Georgia, Kentucky, Louisiana, Mississippi, Maryland Tennessee, Texas Virginia, North Carolina, South Carolina, and Oklahoma

There are about 500 institutions devoted to negro secondary and higher education—that is normal and industrial schools and colleges Owing, however to the inadequacy of the public school facilities for negroes, these institutions have been compelled to expend most of their efforts on elementary work

The statistics for 258 of the more important of them are Teachers 3 419 total students 68 877, elementary students 41 058 secondary students 22 775 collegiate students 2 840 professional students 2 476 students being industrially trained, 34,208 Of the total number of students, 59 5 per cent are in elementary grades and 4 1 per cent are taking collegiate courses

The general tendencies of the present policy with reference to secondary and high schools for negroes are (1) To limit the number of schools doing college and university work The purpose appears to be not to decrease but to increase the amount of first-class college and university work done (2) To increase the financial resources The American Missionary Association (Congregational Church) is engaged in a campaign to raise an Emancipation Jubilee Fund of $1 000 000 for the endowment of its higher educational institutions The Freedmen's Aid Society of the Methodist Episcopal Church is raising a $500 000 Jubilee Endowment Fund for the schools under its control (3) To secure stricter and more helpful supervision There are four general agencies supervising negro higher and secondary schools, viz the Federal Government the State Governments the religious denominations carrying on educational work among negroes and the several educational funds giving financial assistance

The Federal Government and the State Governments of the South exercise supervision over the sixteen State Agricultural and Mechanical Colleges for Negroes There are about as many normal schools receiving State aid over which the States exercise some control Each of the boards and societies carrying on considerable educational work among negroes keeps one or more representatives in the field to supervise the work The Educational Funds besides exercising supervision over the schools they directly aid also exercise indirect supervision over all negro schools for each institution is a potential recipient of aid from them The influence of the Educational Funds has been greatly increased by the comprehensive investigation of negro higher education which the Phelps-Stokes Fund, in connection with the United States Bureau of Education, is carrying on

During 1917–18 the expenditure on higher schools for negroes was By States and municipalities $680,000 by the United States Government, $381,000, from other sources, $3,400 000 There was expended by the sixteen former slave States, the District of Columbia, and Oklahoma, for negro public schools, $12 964 000, and for common school education, $118,981,000

It is roughly estimated that the religious and philanthropic organizations have contributed, since 1865, about $63,000,000 for the education of the negro in the South During the same period, the negroes themselves, by direct contributions, through their churches and other means, have contributed over $30,000,000 Since 1870 the Southern States have expended from their public funds about $143 000 000 for negro common schools, and about $1 840 000 000 for all their common schools

R R M

NERVOUS BREAKDOWN. (See ADOLESCENT CHILDREN THE PHYSIQUE AND STAMINA OF)

NERVOUS DISEASES OF SCHOOL CHILDREN. —Within the limits of a brief article it is impracticable to attempt more than a rapid survey of such manifestations of the commoner forms of nervous disease both organic and functional, as are likely to attract the attention of the observant school teacher Not infrequently such indications of commencing nervous disease will as a matter of fact, come earliest under the eye of the teacher, for nothing surprises the neurologist more than the ease with which the first phenomena of a disturbed or defective nervous system escapes the notice of parents neighbours and others

1 Attention may be directed in the first place to an extremely common variety of nervous disease in children and young people, viz , chorea or St Vitus s Dance

Chorea is a nervous disorder whose connection with the infection of rheumatism *sensu stricton*, is regarded as abundantly demonstrated It is characterized in its typical form by involuntary movements of the face trunk and limbs, sometimes confined to one side of the body more frequently generalized When the movements are on the right side mainly, if not entirely it is usual to find some hesitation or difficulty in speaking (*i e* if the girl or boy is right handed) The chief feature of the movements is that they are abrupt irregular, variable and in the case of the limbs apt to show themselves in the peripheral segments, viz the hands and fingers To some extent, the movements are influenced by emotion and other psychical stimuli It is of much importance for the teacher to recognize however, that ere such involuntary movements are fully developed the patient may merely show a general restlessness or fidgetiness unmodified by reprimand and patently outside volitional control It has been said that the choreic child is punished three times before the condition is recognized once for general naughtiness once for breaking crockery, and once for making faces at its grandmother Although no actual involuntary movements occur, the condition may still be detected by the abruptness or suddenness with which ordinary voluntary movements are made

As the disease is often associated with cardiac trouble delay in undertaking treatment may be dangerous

2 Apt in not a few instances to be confounded with chorea is a nervous disorder of a totally different nature viz habit spasm or better, tic

Tic, the *maladie des tics* of the French is an affection characterized by the more or less regular recurrence of a particular movement or movements, which are, in every instance, of the type, or an exaggeration of the type, of an ordinary voluntary movement (*i e* a purposive movement) The movements of chorea are fairly described as purposeless

A tic is a movement reproduced in season and out of season, preceded by an irresistible desire for its performance and followed by a feeling of relief,

a movement which is the replica of an originally voluntary movement and degenerates from being a "habit" into a genuinely involuntary "movement of the nerves' or "tic' For the development of the disorder, we presuppose a prepared soil, a congenital defect of will a mental instability or inequality without which tic would not blossom

The forms of tic are protean We may have tics of the eyes nose lips tongue neck head hands arms etc We may have sniffing sucking, licking biting whistling coughing grunting nodding tics etc Facial tics such as blinking are among the commonest

In many cases the tic as indicated above has originated in a voluntary action produced by some irritation, as by a particle of dust in the eye an obstruction in the nostril a roughness in the throat and so on Hence it behoves the medical officer to search carefully for such foci of irritation as their remaining untreated may aggravate or perpetuate the tic The appearance of a tic or tics is a sure sign of the neurotic inheritance of the individual apart from traceable irritations or even merely imitation and when one tic disappears another often takes its place Occasionally the outlook in cases of multiple tic is serious enough in spite of the apparently harmless nature of the affection

Reference has been already made to the mental inequality of the subjects of tic Some children are undoubtedly above the average in attainments their tic or tics notwithstanding others again are as clearly backward and incapable of normal advance In suitable cases very much may be done for the sufferer by adequate drill and exercises calculated to enable him to regain control over his muscles

3 Another nervous disease certain to come under the school teacher's notice is **Epilepsy,** whether of the major or minor variety

A major epileptic fit is of course so obvious—with its cry its fall its convulsions tongue biting and involuntary micturition—in fact to the inexperienced eye so startling and distressing that it need only be mentioned in this place Such cases demand expert treatment if the best results are to be obtained

The minor variety called also *petit mal* is in some cases readily recognizable in others it is so slight as to be elusive and to call for acute observation on the part of the teacher

Thus the patient may merely stare aimlessly or look vacant for a few seconds may roll his eyes upward and turn pale may blink his eyes and smack or champ his lips for a moment or two may stop in the middle of a sentence tremble a moment or let his head down without falling without letting any object out of his hands and continue his reading unconcernedly ere it is realized what has been happening In such cases we are dealing with a loss of consciousness that is momentary an *absence épileptique* that need not reveal itself by any muscular twitching or other obvious phenomenon

Sometimes the patient is aware that he has had a fit described by the parents usually as a "turn a "sensation a "feeling" sometimes he is entirely ignorant of it Sometimes the attack be it ever so slight and brief is followed by an exhibition of what is called automatism (*i e* for a few seconds or minutes or longer the child makes a series of movements or goes through a little action or series of actions apparently rational and purposive such as fiddling with his clothes his stockings, the objects in front of him etc) without in reality having any consciousness of what he is doing Sometimes he leaves his seat, sometimes he will hide sometimes he will run

There should be little difficulty in appreciating the significance of such symptoms and the children who may be the subjects of *petit mal* should undergo a minute examination with a view to determine more especially if there is any underlying organic basis for the affection

4 **Hysteria** is a neurosis which may manifest itself in early life especially perhaps at the period of puberty both in boys and girls At this time when physiological equilibrium as between the nervous system and the glandular system is becoming established nervous instability in the guise of failure to control giggling tittering laughing tears and other emotional outbursts on slight or indeed no provocation will demonstrate the type of child with whom we have to deal They may be called "hysterical but this it must be understood is solely in the popular sense such young people may not be suffering from *la grande névrose* at all Hysteria in the scientific sense is a condition whose features are well recognized clinically but all that here concerns us are such symptoms as are likely to attract the attention of the school teacher Hysterical tremors may be specified for instance and hysterical fits The latter are distinguished from epileptic attacks in typical cases by the following considerations the patient if she falls does so without hurting herself she is not deeply unconscious though her eyes may be closed or her eye lids twitching pallor may be noted but not cyanosis crude convulsions do not occur but sometimes the patient lies quiet sometimes she throws herself about in purposive movements the respiration is often panting tongue biting and involuntary micturition are not observed

Hysteria in young people is a nervous disorder calling for immediate and tactful treatment by skilful hands

5 **Stammering** and **Stuttering** are nervous affections which are at once detected and of which as a rule the sufferer is only too conscious Imitation is a factor whose baneful action in this neurosis is often to be deplored It is a matter for regret that the medical profession as a whole has rather depreciated the importance of these disorders leaving them to be exploited by non medical experts Certain it is that such cases should be taken in hand at an early stage and seriously treated in view of the appalling handicap under which the stammerer will find that he labours in later years

6 In addition to the above well defined diseases and affections of the nervous system the school teacher should be cognizant of other nervous states which are less obvious in the sense that they may be less easy to detect by the untrained observer, while further they may appear to be of minor importance

Neurotic Temperament. Thus mention may be made of the child of neurotic temperament, who is not however suffering from any disease in the ordinary sense Two types of the neurotic child are differentiated by Leonard Guthrie the first is characterized by a combination of marked timidity and restless energy, such children are high spirited but easily discouraged demonstrative but selfish impatient of discipline but eager for sympathy, quick learners but prone

to forget A second type couples emotional over-action with a better control, hence, notwithstanding their good powers of observation and intelligence they often pass for being dull and obstinate With hypersensitiveness are linked shyness and pride hence they may appear stolid unless they are really roused when there may be an outbreak of temper or of rage

The teacher should be on the look out for departures from the normal both in a plus and in a minus sense—unnatural precocity or unnatural backwardness There may be evidence of mental or physical fatigue from overwork but in any case the abnormal child should undergo a careful medical examination sometimes conditions such as astigmatism worms adenoids bad teeth exteriorize themselves far more by nervous symptoms in the general sense than by their proper symptoms

A certain onus is laid on the teacher from a brief consideration of the possibilities enumerated in the above paragraphs he or she will probably be the first to note abnormalities or actual diseased conditions and early recognition is essential in the interests of the child S A K W

NERVOUS SYSTEM AND EDUCATION, THE — Education may be defined as the attempt to develop in the individual the most perfect relations with his or her environment in place and time In its simplest form such co relation implies the appropriate response to any immediate change in the surroundings and in its more complex form the adaptation of mental activity to more complicated series of changes Alike in the simplest and in the most complex forms the action of the brain is essential it is that which must be trained What ever view may be adopted of the nature of the relationship of the consciousness and of the mind to the brain the evidence appears conclusive that for normal mental activity normal brain action is essential Extensive injury of the brain is associated with complete loss of consciousness marked physical defects are accompanied by manifest disturbances in mental activity while more subtle changes have as their sequel more or less marked divergences from the normal For the *mens sana*, the *cerebrum sanum* is necessary

Reaction to External Conditions The first essential for co-relation with the environment is definite information as to its nature This is gained through the organs of sense and each special kind of change in the environment acts more particularly on one kind of sense organ Thus contact of gross matter and the addition or withdrawal of heat act specially on the organs in the skin various substances in solution act on the organs in the mouth substances suspended in the air breathed may stimulate the organs in the nose the structures in the ear are called into action by vibrations in the air and those in the eye by certain vibrations of the ether The part of the nervous system connected with each of these senses is not always stimulated from outside through the peripheral structure but may be directly called into action with a resulting sensation (*e g* in epilepsy when before the onset of a fit the patient may as a result of direct stimulation of the brain, experience a visual sensation of the nature of a definite picture identical with that produced by actual changes in the outer world) Further any flaw in the peripheral structure or in the connecting nerves or in the part of the central nervous system involved must necessarily distort the information gained

Such are the "gateways of knowledge" It is thus, indirectly, and with many possibilities of error that information as to our relations with the outer world has to be gained And yet precision of association of our consciousness with these external changes is the first essential for accuracy of knowledge of our surroundings Fortunately, this is capable of improvement by training and to effect such an improvement must be the first object of any rational system of education

While at any time the action of one of these special senses may be dominant may command the consciousness and arrest the attention it is rare that one is ever called into action alone Others are also being played upon Thus changes of consciousness and responses of the organism are usually determined by the associated action of the different sense organs which co operating harmoniously, colour the resulting sensation and give it quality

To secure an appropriate response to these incoming impressions an effective arrangement is necessary by which the body may be set in motion in whole or in part The great effector structures are the muscles By them such crude reactions as the striking of a blow or such responses—often more effective and subtle—as the use of language, spoken or written are made The muscular movements are guided and directed by special parts of the nervous system which the incoming impressions rouse to activity

These reactions to external conditions through the effectors do not necessarily affect consciousness Many of them are inherited instincts, such as the act of sucking when the nipple is put in the infant's mouth or the pecking action of certain young birds These race reactions are the most fundamental and the most resistant of modification The educationist must recognize and accept them, and take advantage of their persistence

Habit and the Nervous System. As the individual is brought into more and more complex relation with the surroundings each incoming impression and each reaction leaves its mark and at any time, the response evoked by a stimulus depends upon the previous reactions which have occurred For there seems to be no doubt that a given reaction once having followed a given stimulus or collection of stimuli the repetition of that stimulus or collection of stimuli or sometimes even of one of the collection of stimuli will tend to call forth the same reaction The whole theory of education is based upon this conclusion for the attempt to develop advantageous habits whether in actions or in thoughts involves the acceptance of such a conception

The evidence in its favour is chiefly derived from a study of the formation of habits in animals and man, and it is so strong as to justify the formulation of a law of the development of lines of least resistance through the nervous system Oliver Wendell Holmes said that the perfectly normal man, placed under the same conditions as on a previous occasion, will do exactly the same thing Had he said 'will *tend to* do' his statement would have been nearer the truth for the combinations and permutations both of the external conditions and of the state of the nervous system, are so endless that the wonder is that the same reaction should ever occur again Certain it is that the more normal the nervous system and the more dominant

the main stimulus, the more likely is the unaltered repetition of the reaction to occur

By reaction is meant not merely the muscular response by act or speech, but the alteration in the condition of consciousness which may accompany it or be independent of it and which may vary from a simple sensation to the most complex trains of thought In Education then, the teacher must strive to work upon a normal nervous system and arrange in developing appropriate responses, for the stimulus of import to be dominant (*i e* for the learner's attention to be arrested)

The Brain and the Spinal Cord From what has been said it is manifest that the nervous system must consist of a receiving and a reacting side so connected that the simultaneous incoming stimuli are properly blended, and so that the present dominant stimulus is associated with past impressions in order that the reaction may be appropriate

The central nervous system consists of a long cylinder of nervous matter called the spinal cord into which pass the nerves from the organs of sense and from which pass the nerves to the muscles Each ingoing fibre divides into two a long ascending part which may ultimately reach the brain and a shorter descending part From these side branches come off and connect up by means of branching terminations with the cells from which the outgoing nerves pass thus the ingoing nerves of any part of the body are related not only with the outgoing nerves of the same part but also with those of distant parts of the body

The spinal cord being thus made up of myriads of such ingoing and outgoing *neurons* (as the individual nerve structures are called) is capable of an enormously varied series of reactions according to the nature of the stimulus and according to the condition of the cord Definite stimuli usually call forth definite results Thus in the case of a dog with the spinal cord separated from the brain pinching one hind foot causes the leg to be drawn up but pressure on the sole of the foot causes the leg to be thrust out as in walking

While with the spinal cord in a normal condition these reflex responses are perfectly definite and purposive although unaccompanied by changes in consciousness under the influence of such a drug as strychnine they may become an incoordinate convulsion This illustrates the importance of a normal condition of the spinal cord for the production of definite and purposive movements

Not only is the spinal cord thus independently capable of complex and definite reactions but it is connected with the brain so that its action is controlled and modified The spinal cord was developed in connection with the tactile mechanism of the skin The great brain or cerebrum on the other hand was developed primarily in connection with the sense organ of smell The advantage of some such arrangement at the anterior end of an animal warning it of changes in the composition of the circumambient medium is manifest The organ of smell has been described by Sherrington as taste at a distance and the peripheral structures connected with it he has termed distance or anticipatory receptors—organs acted upon before the animal has come directly upon the source of the stimulus

A similar development in the brain has occurred in connection with the organs of vision and another with the organs of hearing Finally these have all been linked up together while the ingoing fibres from the spinal cord connected with touch, etc, have also been received into this associative complex and thus means have been afforded for that association of sensations, the importance of which has been previously emphasized

From this great associated mechanism in the cerebrum, fibres extend down the spinal cord and direct the simpler reaction of that structure

The complexity of the cerebral mechanism is the basis of the complexity of mental activity which depends upon the development of the capacity for reception and association

The complicated nature of the paths in the spinal cord has been already referred to, but these paths are simple when compared with the myriads of labyrinthine connections which exist in the cerebrum The reactions of the spinal cord to a given stimulus are more or less fixed and can be foretold under average conditions but the possible reactions of the individual when the cerebrum is involved appear almost endless and in the attempt to foretell them so many factors have to be considered that prophecy becomes almost hopeless This is the great difficulty of the educationist The results of his attempts to modify cerebral activity may be far other than those he desired to evoke

Determinants of Brain Action Probably the most important determinant is the hereditary history of the brain The great race characters of cerebral activity are recognized by all but in every case these are modified by the influences of the more direct family descent And in cerebral development as in the structural development of the body, all the complicating influences of heredity and all the variations which the Mendelian Law attempts more or less successfully to elucidate are met with These fundamental hereditary factors are often more or less modified in early childhood by attempts at training by parents ignorant of what they wish to act upon and influenced only by the traditions of the past and the fashions of their own generation

The second important determinant of brain action is the nutrition of the organ and this is too frequently ignored But any one who has studied the response to a stimulus in an individual with a well-nourished brain and in the same individual in a state of fatigue must have recognized the importance of this factor in any attempt at education To try to train a badly nourished brain is to court failure But in order to have the requisite knowledge of the condition of the brain the educationist must be a trained physiologist and physician! The result of fatigue of the cerebral mechanism has been very fully studied by physiologists It manifests itself in a decrease in the power of attention a decrease in the definiteness of the response to the stimulus, a prolongation of the time which elapses between the stimulus and the response and in a decrease in the power of the muscles to respond fully to impulses from the central nervous system (See FATIGUE)

In teaching the stimulus applied must be dominating arresting to the attention so that some definite reaction may be called forth and so that some definite line of least resistance, some definite mark (the basis of memory) may be left upon the brain in order that the repetition of a similar stimulus may be associated with it and the stored impression be again called forth or recollected

In real education it is the lines of action cerebral and mental which are least developed that require most attention to render them more definite Just as a trainer of the body tries to ascertain

which groups of muscles are weakest, and endeavours by appropriate exercises to strengthen them, so the educationist must find what lines of action in the brain require similar attention In training the brain and mind as in training the body it is desirable that the exercises should be well within the power of the brain and should proceed from the simpler to the more complex

The development of the brain does not proceed at the same rate in all individuals, and some simple tests of the stage of development is useful Such a method has been devised by Binet and Simon (*q v*) and elaborated and improved by other workers Every teacher should be familiar with these methods

That the brain is capable of education even to the extent of one part being able to take upon itself functions usually discharged by another part has been demonstrated by removal of parts of the brain in monkeys and by the recovery of function after extensive destruction of brain substance by gun shot wounds Some such direct evidence of the capacity of the brain for education is wanted to cheer the heart of the teacher D N P

NET BALL.—The great advantage which this game holds over lacrosse cricket and hockey for girls is that it is played on a much smaller piece of ground and either in or out of doors It therefore recommends itself to a school or girls club where the amount of ground available is limited The outlay is considerably smaller than in any other game, as only the goal posts and an Association football have to be provided the game being played with the hands Considered with a view to the result on the physique of the players net ball calls for no criticism as an upright position is maintained throughout the greater part of the game and both sides of the body are exercised to an equal extent Nor should it be looked upon as a game for smaller children only when played by older girls it is very warm and exciting Quick unselfish passing is its chief feature as no player is allowed to hold the ball in her hands for more than three seconds

The field which is usually 100 ft by 50 ft, is divided into three equal courts by lines drawn across the field parallel to the goal line Near to the top of each goal post is attached a net, into which it is the object of the players to throw the ball in order to score a goal There may be five seven or nine players on each side Take for example, the case where there are nine a side There are, then, three defences in the division near their own goal—one centre and two wing centres in the middle division—and three attacks in the division near their opponents' goal Each player remains in her own division The umpire starts the game by throwing up the ball in the centre of the field between the two centres, one of whom catches the ball and passes it to one of her own side, and she in turn passes it to one of her attacks The aim of the side is to get the ball to its own goal-shooter (the centre attack player) who, standing inside the shooting circle, then endeavours to throw the ball so that it will drop through the net and thus score a goal No player may run with the ball, nor may she snatch it out of another player's hands, nor in any way check it except with her hands There should be no rough or scrambling play To excel at net ball it is essential to be quick and "nippy" in every action, ready to seize an opportunity, and full of resource P L

NETHERLANDS, THE EDUCATIONAL SYSTEM OF THE.—The history of education in Holland during the last century is dominated by the religious question The famous law of 1806, which called forth the admiration of the French when Holland was annexed to Napoleon's Empire, in 1810 had laid a basis for undenominational state instruction which the Liberal party, which was all powerful for the larger part of the nineteenth century, maintained and strengthened The sectarian parties, however the orthodox Protestants and the Roman Catholics, who worked together for this end succeeded in getting the right of private denominational education to state subsidies recognized and those subsidies gradually increased This was the issue on which Dutch politics turned for a long time Quite recently, however the "school war" was concluded by a complete victory of the supporters of the private school

A Royal Commission (31st December 1913) composed of the prominent members of all parties reached practical unanimity on a proposal for a new education clause in the Constitution (Clause 192) It now reads—

(1) Public education is the object of the assiduous care of the Government

(2) Teaching is free except for supervision by the Government, and moreover as far as general education both elementary and secondary, is concerned except for the testing of the teacher's capacity and morality, as regulated by law

(3) Public education is regulated by law Everyone's relative convenience shall be respected

(4) In each municipality the authorities shall supply sufficient public general elementary education in a sufficient number of schools In accordance with rules to be fixed by law, dispensation from this clause may be given provided that opportunities for receiving such education be given

(5) The requirements of efficiency to which all education paid for by the public money must conform are regulated by law Freedom of spirit ('richting") shall be respected as far as private education is concerned

(6) These regulations for general elementary education shall be and are regulated in such wise that the efficiency of general elementary private education wholly paid for by the public money, and of general elementary public education is equally strictly safe guarded Especially the freedom of private education in the choice of books and further implements of teaching and the appointment of teachers shall be respected

(7) Private general elementary education which complies with the considerations regulated by law, shall be paid for by public money on the same basis as public education The conditions on which private general and sectarian, and preparatory higher education can claim subsidies of public moneys shall be regulated by law

(8) The King causes an annual report of the conditions of education to be submitted to the States General

The new Education Act, necessitated by the revision of the Constitution, and passed in October, 1920 gives effect to the equality paragraph of the Constitution in such a way that there is financial equality of public and private education in the following respects (*a*) training of teachers, (*b*) salaries of teachers, (*c*) construction of schools, (*d*) books and implements

Present State of Primary Education. A history of primary education in Holland during the last century inevitably tends to give undue prominence to the religious difficulties The political contest which raged about the schools for so long has too often had the effect of neglecting the realities of education in practice too

The alteration of the Constitution necessitates new Education Acts which the present Cabinet drawn from the parties of the right is shaping in such a way as to assure private denominational education the full benefit of the new principle of equality Liberals and Socialists are now often heard to complain that private education is being favoured to the detriment of public education The new Acts are in charge of the Minister of Education (before the present Cabinet came into power in 1917 no separate Ministry of Education existed education being controlled by the Minister of the Interior) Dr De Visser who has appointed a permanent Commission of Advisers composed of fifteen members drawn from all the various branches of education

An efficient system of state supervision is the corner stone of the building of primary education in the Netherlands For this purpose the country is divided into four provinces each under the charge of a head inspector these have under them a total of twenty seven inspectors and seventy under inspectors The inspectors have a greater power both in the matter of appointing the staff and drawing up the programme over the public than over the private schools yet the latter by no means escape their attention and any school which wishes to qualify for the state subsidy has to satisfy them of the efficiency of its tuition

Only qualified teachers are allowed to teach The lower teacher s certificate is procurable by anyone at least 18 years of age who passes the state examination for that purpose There are training and normal schools which prepare candidates for this examination The training schools give the fullest and best instruction They require their pupils to pass in examination before admission their instruction is free and the pupils are entitled to an annual allowance for maintenance during the four years of the course (14–18) Many candidates are also prepared at courses mostly instituted on the initiative of some teachers who can claim a state allowance for such lessons To obtain the lower certificate only a small modicum of knowledge is required A teacher who has two years of practice can pass a further State examination to obtain the higher certificate which entitles him if he be 23 years of age to become the headmaster of a school The subjects of this examination are about the same as those for the first In each subject especially in mathematics a greater knowledge is required Many people believe that the demands for the lower certificate are too modest while those for the higher certificate comprise so many different subjects that they encourage cramming An amalgamation of the two examinations is sometimes advocated

According to the law, at any school with more than forty pupils the head teacher must be assisted by a teacher when there are more than ninety pupils he must have two assistants and after that one teacher for every fifty five pupils In practice however especially in the towns the number of pupils per teacher is far smaller

The reforms of Dr De Visser affect the financial position of the teachers in Holland very closely Up till now the Act of 1878 was in force according to which the expenses for public elementary schools were divided between the State and the municipalities in such a way that the municipality was responsible for the school building etc while the State made a contribution towards the salaries of the teachers Before the new Act came into force the State already advanced to private schools the money required for the school building etc and for salaries a contribution similar to that given to the municipality for the public schools The result was that at most private schools it was found impossible to bring the salaries up to the level of the public school while the public teachers especially in large and rich towns were usually rather well off In order to establish absolute equality Dr De Visser in 1919 passed an Act by which the State assumes the entire responsibility for teachers salaries both at private and public schools fixing them by Order in Council and forbidding municipalities or school committees to add to them Although the Order (issued December 1920) fixes higher salaries for the towns than for the country the result will be that in towns like Amsterdam Rotterdam The Hague the standard of teachers salaries at public schools is lowered while it is raised in some poorer country parts The private teachers of course will gain considerably by the new arrangement The Act was vehemently denounced by the public teachers whose organization Bond van Nederlandsche Onderwyzers is largely socialistic but it was passed almost unanimously by Parliament, as it was thought to be a logical consequence of the new Education Articles of the Constitution The salary of a married teacher without the higher certificate in a rural district will now be fl 2 600 to fl 2 700 (between £216 and £225) of a head master in a rural district it may be fl 4 000 (£366)

Elementary education comprises instruction in reading writing arithmetic Dutch language natural history geography nature study singing, drawing physical exercise plain needle work for girls

Furthermore, instruction may be given at elementary schools in French German English mathematics commercial science, international history manual work agriculture horticulture fancy needle work for girls

Of these French is often given in the last form of the more expensive elementary schools of six forms agriculture and horticulture at rural schools but most of the other subjects are only included in the curriculum of so called M U L O schools (schools for extended elementary education) These schools are intended to meet the requirements of those pupils whose desire for knowledge is not satisfied at the end of the ordinary six years course but who cannot or will not go to the schools for secondary instruction They usually have three more forms after the first six and they are quite free in composing their programme from some of the second group of subjects In the last fifteen years these schools have grown in numbers and in importance They often provide in their last forms what in reality is secondary education, although they retain the system of teaching through a class teacher In 1913 there were 547 (227 public 320 private by no means all denominational)

The number of elementary schools was, in 1917,

5,784, of which 3,388 were public, and 2,396 private schools

The number of pupils on 15th January, 1917, was 516 140 boys and 492 226 girls (673 and 7 287 more than in 1916 of these the public schools got 1 756 and 279 the private schools 5 238 and 7 008) Since 1900 there is a compulsory Education Act for children up to 13 years of age a Bill to raise the age to 14 is in preparation As a result there is hardly any illiteracy in Holland in 1912 of 18 712 recruits for the army 18 could read only 147 could neither read nor write The Act of 1900 did not do away with school fees they are maintained at an amount of 4d per month at least In the towns there is a distinction of schools in classes according to the fees exacted but on the whole class differences play a far smaller part in education in Holland than they do in England Exemption from payment of fees may be given and in 1917 free education was given to 131 130 boys and 125 871 girls these numbers show a decrease when compared with 1916 of 4 350 boys and 3 517 girls for the public schools and 1 412 boys and 705 girls for the private schools Co education is general

Education in Holland has maintained itself at a high standard since Cuvier (*q v*) wrote his laudatory report In 1836 Cousin wrote that the methods of instruction used in Dutch schools were au dessus de tout éloge When England was about to tackle educational reform Matthew Arnold made a study of education on the Continent After recalling Cuvier s astonishment at the excellence of Dutch popular schools then unique in Europe Arnold writing in 1861 says ' The popular instruction of other countries has grown up since that time but I have seen no primary schools worthy to be matched even now, with those of Holland A popular education which for extent and solidity combined has probably never been equalled In 1902 Mr J C Medd in a special report published by the Board of Education, unreservedly endorsed Cousin s phrase No one ' he writes could fail to be struck with the ' mind ' and intelligence which the teachers infuse into every lesson He was particularly struck by the methods of Mr Jan Ligthart whose school (an ordinary State school) in the Hague where the children paid 2d a week he visited The general tendency of the instruction is to connect Nature Commerce Industry and Social Life with the lessons Excursions into the country of which accounts must afterwards be written are frequent The youngest children have a small plot of grass answering to a meadow to attend behind the school the elder ones have a little arable land to cultivate where they grow a few industrial plants Mr Ligthart who died in 1918 at a comparatively young age has exercised a considerable influence on the recent development of educational methods in Holland and his work incidentally shows that great latitude is left to individual head masters of ordinary public schools

Notwithstanding all this, it has been felt in Holland for some time that the political struggle of which education was the object has impeded its development by diverting attention from its real needs It was not only the religious question about which the debate raged There was the agitation of Socialist teachers against the institution of the headmaster and for what they called "the republican school" It was hoped that the agreement of parties on the alteration of Article 192 would herald the advent of an era of fruitful reform As a matter of fact Dr De Visser has already introduced some very useful innovations—an improvement for instance, of physical exercise at schools—but the adjustment of the financial claims as between private and public education still proves an arduous task

Technical Education Arts and crafts schools took their beginnings in Holland from private initiative Municipality and State soon came forward to help financially and at the same time to advise and to direct In 1899 a special bureau of inspection for this branch of education was instituted and in this year Dr De Visser passed a new Act dealing with it, which in this branch of education too puts public and private schools on an equal footing The State contributes 70 per cent towards the costs provided a municipality or private persons supply the other 30 per cent For secondary schools these are respectively 75 and 25 per cent

(*a*) *Elementary Technical Education* Elementary technical education is given in quite a number of different institutions There are in the first place, the Ambachtscholen craft schools where in a three years course theoretic instruction is given in drawing the knowledge of materials, tools and instruments in construction, physics, the Nether lands language arithmetic and mathematics together with practical instruction in carpentering, painting forging turning, cabinet making typography etc etc Then there are the ' Vakscholen" professional schools for tailors shoemakers up holsterers compositors hairdressers and textile workers Certificates are given to which many employers attach importance

Evening classes are held at " professional drawing schools, of which there were in 1918 326, with 19 236 pupils and at citizens' evening schools,' of which there were 42 with 7,260 pupils These institutions for which the trades unions have done much supply instruction in Netherlands language, arithmetic mathematics physics, mechanics, line and professional drawing

The State also subsidizes commercial evening classes of which there are a great many all over the country The subjects taught are geography book keeping commercial correspondence, commercial science the knowledge of wares commercial law Netherlands and foreign languages typewriting and shorthand

Agricultural and horticultural winter evening classes have been established by the State in numerous towns where young farmers and gardeners can at small cost, acquire the theoretical knowledge needed for their trade This instruction is purely professional The special needs of the region are always taken into account These courses usually take two winters They are of a more general character mostly for younger people, or deal with some particular subject like manure or feeding stuffs They are given by ordinary elementary teachers who in that way supplement their salaries, also by veterinary surgeons In the winter of 1912-13, 406 agricultural, and 120 horticultural courses were held A very high tribute to the intelligence of this instruction and to its effect on the development of agriculture in Holland is paid by Mr Robertson Scott in his book *War Time and Peace in Holland* (1915)

Besides the State courses, tuition in agriculture and horticulture and forestry is also given at private institutions, where foresters, keepers, surveyors and foremen are trained Most of these courses owe their existence to the Netherlands Heath Company They have a two years course including theoretical and practical instruction

(*b*) *Secondary Technical Education* For the training of the men who are to find their place between the workmen and the scientifically trained engineers there are the secondary technical schools, which have recently much increased in number and in importance These schools too were started by private initiative and are now largely subsidized by State municipality and province Big institutions of this kind are at Amsterdam and Dordrecht, where electrotechnics mechanics and the sugar industry and at the latter place also naval architecture are taught at Enschede in the centre of the textile industry where textile factory managers are trained at The Hague and Rotterdam, at Haarlem, Leeuwarden, Sneek and Utrecht (building trade) Pupils with a theoretical and those with a practical preparatory training are admitted, some coming from the three years course high school, others from craft schools some of which especially prepare their pupils for the secondary technical school Most of these schools have a three years course Certificates are given after a final examination

Secondary commercial schools private and municipal ventures subsidized by the State are mostly organized to fit in with the three years' course of the high schools that is they supply two further years of professional instruction to pupils either coming from such schools or having received equivalent education in the first three forms of the commercial school itself The subjects of the two years' special course are the following book keeping commercial arithmetic, commercial law, general commercial knowledge political economy, political science the Netherlands French German and English languages and commercial correspondence commercial geography and history physical science and knowledge of wares Optional subjects are Swedish Norwegian, Italian Russian Spanish and Malay

There are two complete secondary agricultural schools, one at Groningen with a 2½ years course the other for agriculture in the Colonies, at Deventer with a three years course both admit only pupils who pass an entrance examination for which some years passed at an ordinary secondary school afford the best preparation At both schools instruction is theoretical as well as practical Besides these schools there are nine State agricultural and five State horticultural winter schools mostly attended by farmers sons who want to go in for practical scientific farming At Bolsward Friesland, there is a State dairy school with a two years' course

Under secondary technical education must also be ranged the maritime schools of which there are ten in Holland Here young people after having attended the ordinary elementary school and after a certain period (about a year) of deck service on board some sea-going ship, are trained for the mates' examinations that are held by a Royal Commission Moreover there are some twelve fishery schools

For girls there are technical schools at Amsterdam (since 1865), Arnheim (1873), The Hague (1876), and Rotterdam (1885), all due to private initiation but now subsidized by State province and municipality They give tuition in drawing, plain and fancy needlework lace-making cardboard work, book-keeping, along with a continuation of elementary education Besides them there are domestic science and cookery schools

Secondary Education. For children who want a good general education after the completion of the six years' course of the elementary school and who are not content with the M U L O classes in Holland two courses are open They can go on to the High School (Hoogere Burgerschool) or to the Latin School (Gymnasium) Till recently the majority of schools of both these kinds were public schools maintained by the municipality and subsidized by the State The number of private High Schools and Latin Schools has, however for some time been growing with the subsidies which the State granted them and it is sure to increase very rapidly now that here too the principle of equality of private and public schools before the public exchequer has been conceded It deserves notice, however, that generally the only difference between the private and the public institutions of both these kinds is the denominational one Class distinctions there are none and lower and higher middle class and aristocracy send their children to the same schools the choice being directed mainly by the plans as to a future profession

The High Schools These were instituted by the great liberal reforming Minister Thorbecke in 1863 (Secondary Education Act) Up to that there were for the bourgeoisie only the Latin schools which prepared for the university and various kinds of private ventures boarding schools etc Thorbecke stated the purpose of his creation with illuminating clearness in 1862 'If he said 'we consider elementary education as the instruction of the people, forming as it does the beginning of knowledge and being destined for all alike and higher education—to which the Latin Schools are technically considered to belong—as destined for the small number of those preparing for a profession or employment for which a scholar s training is needed then the intermediate realm of secondary education is for that numerous portion of citizens which is above elementary instruction and strives after general knowledge and culture which may prepare them for the various professions of our busy social organization'

The high school was an immediate success and the number of schools and of pupils have since 1863 never failed to increase On 31st December, 1917 there were 102 high schools 33 State 48 municipal and 21 private high schools Of these latter five are schools for girls only while the others, with the exception of a few private schools, admit both sexes In 1920 the number of male pupils was 16 394, and that of female pupils 5,916 There are also twenty high schools for girls which do not prepare for the officially recognized final examination Some particulars about the later careers of the pupils of the high schools may be of interest I quote on page 1189 some figures from the 'Ineenschakelingsrapport' collected in the year 1902 It should be remembered that since 1902 the Polytechnical School at Delft was raised to the status of a university

Thorbecke, in the heyday of nineteenth century enthusiasm for science, gave the High School a

	Polytechnical School	Universities	Commerce and Industry	Army and Navy	Postal Service	Railways	Education	Civil Service	Agricultural School at Wageningen	Various	Deceased or Unknown	Total of pupils who passed final exam.
	%	%	%	%	%	%	%	%	%	%	%	
Tilburg, 1866–1902	23	19	14	5	3	6	3	12	–	12	2	107
Arnhem, 1868–1902	22	15	14	9	2	2	3	10	1	12	9	325
Amsterdam, I 1865–1902	16	26	21	4	1	–	3	4	1	7	9	885
Amsterdam, II 1899–1902	27	36	19	3	–	–	4	–	–	9	1	127

very pronounced science character Below is a programme of the High Schools, as it has been fixed by Royal Decree of 16th June 1920—

	Classes					Total
	I	II	III	IV	V	
Mathematics	6	6	6	4	4	26
Mechanics	–	–	–	2	(2)	4 (2)
Physics	–	–	4	3	3	10
Chemistry	–	–	–	4	4	8
Practical Chemistry	–	–	–	–	2	2
Natural History	2	2	1	1	2	8
Cosmography	–	–	–	1	–	1
Political Science	–	–	1	1	–	2
Political Economy	–	–	–	–	2	2
Geography	3	3	2	1	1	10
History	3	2	2	2	2	11
Dutch	4	3	3	2	2	14
French	5	4	3	2	2	16
English	–	4	3	2	2	11
German	4	3	3	2	2	14
Commercial Science	–	–	–	1	(2)	3 (1)
Freehand Drawing	2	2	2	2	1	9
Rectilinear Drawing	–	–	–	2	(1)	3 (2)
Physical Culture	3	3	3	2	2	13
Total	32	32	33	34	(33) (34) (36)	(164) (165) (167)

All Lessons last 50 minutes

The most serious objection raised against this curriculum is that it consists of too many subjects to enable the pupils to get more than a smattering of most of them while the demands of the final examination are so heavy that there is a strong tendency for the work in the upper forms to degenerate into cramming with a view to them The final examination was, up to this year held by travelling commissions appointed each year afresh by the Government One of the important reforms passed by Dr De Visser this year does away with this system leaving the final examination to be held by the school masters themselves under the supervision of Commissioners Probably this will have a salutary influence on the spirit of the instruction at the high schools At any rate there can be no doubt that even as they have been up to the present these schools, by inculcating respect for hard intellectual work and scientific fact have done a great work for the mental development of the Dutch middle class

The high school was intended to give a rounded-off education preparatory for the struggle of life But very soon pupils of the high schools sought their way to the university At first they could only be admitted there after having passed a State examination which is equivalent to the final examination of the Latin schools (and they had, therefore to acquire Latin and Greek) But, in 1878 an Act was passed enabling those who had passed the high school final examination to go in for university examinations in medicine, the right to be promoted doctor being withheld from them It was given them only in 1917 by a private member s Act (Act Limburg) The statements given above show to what extent the high school has become a rival of the Latin school The position has often been described as unsatisfactory and a Royal Commission was appointed in 1903 to examine what measures were required for the better co-ordination of the various branches of education, "Ineenschakelingscommissie"

Gymnasium This is the continuation of the old Latin school

The Act of 1876 on higher education (the gymnasium is officially reckoned to belong to higher, not to secondary education in order to emphasize its character of being preparatory to the university), lays down that in each municipality of 20 000 inhabitants there shall be a gymnasium With the exception of Amsterdam, Rotterdam and The Hague the municipalities receive a Government subsidy amounting to one half of the annual cost

The duration of the course is six years The following is the programme of the gymnasiums, as it has been fixed by an Order in Council of 26th August, 1921—

	I	II	III	IV	V			VI		
					A	All	B	A	All	B
Greek	–	6	6	5	3	3	–	5	3	–
Latin	8	5	5	5	4	3	–	6	3	–
Dutch	4	2	2	2	–	2	–	–	2	–
French	4	3	3	2	–	2	–	–	2	–
German	–	3	2	2	–	2	–	–	2	–
English	–	–	3	3	–	2	–	–	2	–
History	3	3	3	3	1	2	–	1	3	–
Geography	2	2	2	2	–	1	–	–	–	–
Mathematics	5	4	2	2	–	2	3	2	–	5
Physics	–	–	2	2	–	3	–	–	–	3
Chemistry	–	–	–	2	1	–	3	–	–	4
Natural History	3	2	–	–	–	–	3	–	–	2
Physical Culture	2	2	2	2	–	2	–	–	2	–
Hand Drawing	2	1	1	1	–	–	–		–	–

At the end of the course, a final examination has to be passed before the masters of the gymnasium, under the direction of three persons, nominated by the Minister of Education They generally

are professors at one of the universities The certificate delivered after a successful examination admits to any university and the technical University of Delft The ' State examination " which has to be passed before a specially appointed commission, gives the same privilege

At the head of a gymnasium there is a rector, assisted by a conrector The masters are of the same class of men as the high school masters although there is a larger proportion of university graduates among them The inspector of gymnasiums supervises all gymnasiums, advises the Minister of Education on all matters concerning the gymnasiums and presents to him a yearly report In every municipality with one or more gymnasiums a college of curators, appointed by the municipal council, attends to the application of the higher education act

There are also private gymnasiums which may receive a subsidy from the State and can be designated as entitled to give to those of their pupils who have been through a full course a certificate giving them access to a university An examination held under the same conditions as for the public gymnasiums, is required before such a certificate can be granted Before a private gymnasium can receive this privilege it must have satisfied various requirements in regard to its programme and its staff

Universities. There are to day in Holland three State universities, at Leyden Utrecht and Groningen, and one municipal university at Amsterdam All these have the five Faculties of Theology Law, Medicine Mathematics and Natural Science and Literature and Philosophy (Arts) There is furthermore one private university on a confessional (Calvinist) basis, the Free University at Amsterdam degrees conferred by which have the full *effectus civilis* since the University Act of 1905 passed by the clerical ministry of Dr Kuyper (it has existed since 1880) By the same Act the Polytechnic School at Delft was promoted to a university (rendering possible graduation in engineering) There is a private University of Commerce at Rotterdam since 1913 an Agricultural University at Wageningen and a Veterinary University at Utrecht

University education is in the main regulated by an Act of 1876 in which however important alterations are to be made this year (*see* below) The four universities of Leyden Utrecht Groningen and Amsterdam are each governed by a body of five curators, who are the intermediaries between the Government (or in the case of Amsterdam the municipality) and the university The annual budgets pass through their hands They on the advice of the faculty concerned submit names for the appointment of professors and lecturers to the Government (or in the case of Amsterdam to the municipal council) The ordinary professors form together the Senate of the University One of them holds the office of Rector Magnificus of the university, an office tenable for only one year, and to which they are appointed in order of seniority

Everyone enrolled by the Rector is allowed to attend all lectures in all faculties upon payment of 200 guilders per academical year At the State universities this fee need not be paid more than four times

In order to be admitted to a university examination one must hold the certificate of the final examination of a gymnasium or a high school with a five years' course or the so-called " State examination," which is on the lines of the final examination of a gymnasium and which is held annually under the auspices of the State primarily for those who have not been regular attendants at either a gymnasium or a High School An Order in Council lays down which degrees of other countries admit their holder to university examinations in Holland The degree of Bachelor given by any one of the universities of the United Kingdom is recognized as such Measures have recently been taken to facilitate the admission of holders of degrees of other countries to obtain a doctor's degree

In all faculties there are two examinations, the " candidate's " and the " doctoral," to be passed before the student is admitted to take his doctor s degree Theological students have moreover to pass a " propaedeutic " examination generally at the end of their first year of study, in Hebrew and Israelitic Antiquities

There are no prescribed terms for the taking of examinations but it may be said that the minimum number of years after which students may (and in many cases do) pass their doctoral examination is four in the faculty of law five in those of theology arts and mathematics and seven in the faculty of medicine

It has long been recognized that the regulations laid down by the Act of 1876 for university examinations were too rigid and left too little freedom to students in the planning of their studies A new Academical Statute has been established by law in 1921 which is to remedy this defect In future free choice of one chief branch of study combined with two subsidiary branches which may even belong to other faculties will be the rule for the doctoral examination in all faculties except that of medicine To obviate the dangers of injudicious choice and premature specialization however the first (candidate s) examination will comprise an obligatory complex of branches yet leaving a rich variety of choice The doctor s degree which the 1876 Act had attached to one particular science (Doctor of Classical Literature Doctor of Nether lands Literature etc) will again belong to the faculties as a whole P GEYL

NETHERLANDS, THE UNIVERSITIES OF THE. —**Leyden University,** one of the three State universities of the Kingdom of the Netherlands was founded in January, 1575 On 28th December, 1574 Prince William of Orange then still Stadtholder of King Philip II of Spain by letter and through his Commissary (Dr Jac Taynert) proposed to the States of Holland and West Friesland that they should establish a school or university where the youth of Holland and Zea land Brabant Flanders, and the neighbouring countries could be educated and instructed in the " true knowledge of God and various good honest and free arts and sciences tending to promote the lawful government of the country "

The discussions on this proposal by the States, chronicled in two documents, dated 2nd January, 1575 show that the Prince, by the mouth of his Commissary suggested the towns of Leyden in Holland or Middelburg in Zealand as the most convenient places for such a university The town of Gouda had also endeavoured to

have the proposed university established amongst them

On 3rd January, the States deciding in favour of Leyden wrote to the Prince that 'they themselves had already for some time contemplated an establishment of the kind but, after having prepared a plan for it had laid it aside on account of the daily warlike disturbances But now in accordance with the Prince s salutary proposal, they had chosen Leyden, and appointed a committee of three to promote the work without delay They requested the Prince to engage if possible M 'Bosulus' (probably Matth Bossulus who was Rector of the College of Boncour at Paris in 1583 and is said to have been an excellent orator and former 'informator of Don Carlos son of King Philip II as well as Professor of Rhetoric in the University of Valencia in Spain) as Professor of Philosophy as they considered it best to commence with philosophy (*Ars oratoria*) Latin Greek and Hebrew besides theology for which they hoped to find some professors to make a beginning till the Prince should have found some better and more famous doctors On 6th January the States of Holland appointed three curators to take immediate steps to establish the university the Convent of St Barbara (on the Rapenburg) was prepared as its habitation (replaced on 4th Sept 1577 by the Church of the Beguines and in 1581 removed to the opposite side of the Rapenburg to the former church of the White Nuns) and Prince William in the name of King Philip II licensed the town of Leyden to establish a free public School and University for the sciences of Divinity law and medicine philosophy and all other free arts besides the teaching of Latin Greek and Hebrew and to provide it with such ordinances and statutes as should be considered necessary forbidding for ourselves and our successors any other university to be established in Holland and Zealand

The inauguration of the new institution was fixed for and took place on 8th February 1575 On 2nd June the Prince of Orange issued a body of statutes in Latin and Dutch still preserved in the Leyden municipal archives for its proper government the States assigned to it an annual income of 5 000 guldens (£416 13s 4d) derived from the revenues of dissolved convents and a plan for the courses of study was drawn up

In the same month an unsuccessful effort was made to obtain the libraries of two dissolved abbeys (of Middelburg and Veere) for an academical library But the beginning of this institution was made by the Prince of Orange who presented to the university a copy of the Bible (in four languages) published in eight volumes by Plantin at Antwerp in 1569 under the editorship of Arias Montanus Plantin himself while on a visit to Lipsius at Leyden in 1581 presented to the University copies of a *Corpus Juris* and *Becani Opera* published by him By these and other donations the library now so rich in MSS and printed books had already (in March 1587) increased so much that the celebrated Janus Dousa (Jan van der Does) was appointed librarian

In July 1576 the States settled the form of examinations also the ceremonies customs and vacations and ordained that the rector and professors should wear blue robes (*tabards*) and caps (*bonnets*) and should alone be qualified to use the Great Seal

On 8th June 1577, William Silvius, of Antwerp, was appointed typographer, bookseller, and general printer to the university

The above historical details, gathered from official correspondence and documents show that the chief reason for the establishment of the university was the propagation and support of the Reformation There is therefore no ground for the legend printed in various publications, that Leyden University was especially founded to reward the burgesses for their heroism shown in the siege of their town by the Spaniards, which they endured from May till October, 1574, nor for the tradition that the burghers, having been offered a choice between a university and exemption from certain imposts chose the former Some such exemption and other privileges were accorded to the university in 1577 and afterwards but for reasons and considerations that have no connection with its foundation or the siege of the town

Founded as a seminary for the Protestant faith, it became an asylum for learned fugitive French Huguenots as well as for English Puritans

During the French domination King Lodewijk (Louis) made it in 1807 the Royal University of Holland But after the incorporation of Holland with the Napoleonic Empire in 1810 the Emperor Napoleon decreed on 22nd October 1811 that Leyden University should form a part of the Imperial University of France as an academy with five faculties and on 31st December of the same year it ceased to exist as an independent institution till its restoration in 1814–1815

The annual number of students is about 800 The library contains more than 170 000 printed books and nearly 6 000 MSS some of which are of great value

Utrecht University At Utrecht the magistracy had already in 1470 endeavoured to establish a university and again after the expulsion of the Spaniards but nothing came of this and other plans except the erection of a town library in 1581 which they endowed mostly with the printed books and MSS found in suppressed monasteries Hence instruction remained entrusted to five chapter schools till 1586 when the magistracy closed them In 1634 the town and province of Utrecht combined to erect a *Schola illustris* which the States of Utrecht two years later (16th Feb 1636) raised to a university with six professors and 270 students shortly afterwards sixteen professors and four faculties were added In 1672 French troops occupying the town used the university buildings as barracks In 1674 when there were only twenty two students all its rights were restored and in 1736 it contained 229 students including about 75 English and Scottish Napoleon having incorporated Holland with the French Empire in 1810 contemplated the abolishment of the institution and a decree of 22nd October 1811 was intended to reduce it to a 'secondary school but this plan was frustrated by the then rector Heringa and his colleagues And though the activity of the university was temporarily impeded on 5th November 1815 it was re opened as a State university and now has about 40 professors and 750 students The library which absorbed the old town library, possesses more than 10 000 printed books and 1 500 MSS

Groningen University. The University of Groningen was a continuation of the schools of the *Fratres Communis Vitae* and of the Martinus Church (St Martin's) The latter was so celebrated

in the sixteenth century, under its rector, Regner Praedinius (*d* 1559) that students from all parts of Europe resorted to it as to a famous university It fell into decay during the religious wars and the Spanish domination But in 1594 when Prince Maurice of Orange had wrested the town from the Spaniards the Provincial States of Groningen formed the plan of erecting a university, and after various preliminary efforts and preparations founded and opened it in June 1614 It was inaugurated on 23rd August, 1614 and flourished till the latter part of the seventeenth century In the first seventy five years of its existence 6 230 students matriculated among whom were 2 680 outlanders (Germans 2 141 French 93 English 10, Hungarians, 162 etc) After 1690 the number of entries diminished considerably and under the French King Lodewijk (1806–10) it was in danger of being dissolved After the French annexation of Holland the University of Groningen was like that of Leyden incorporated as an academy with the University of France (22nd Oct 1811) But after the expulsion of the French and the establishment of the Kingdom of the Netherlands it was on 2nd August 1815 re-established as a State university with five faculties and is now again in a flourishing condition, with more than 400 students

The universities of Utrecht and Groningen were established, in 1815, as State universities of the newly created Kingdom of the Netherlands

The Two Universities of Amsterdam There are two universities at Amsterdam (*a*) the Communal University which is uniform with the three State universities in government administration number of faculties, staff of professors teachers, etc and (*b*) the Free University

(*a*) The Communal University The town of Amsterdam established a university in 1632 under the name of *Athenaeum illustre* with two faculties philosophy and history to which shortly after wards mathematics and nautics were added In 1867 the sphere of the philosophical and medical faculties was considerably extended and by a law of 1876 the town obtained permission to change the Athenaeum, which had hitherto been only a free high school into a university having the same rights and rules as the three State universities of Leyden Groningen and Utrecht the appointment of its professors to be confirmed by the Govern ment The average number of students is about a thousand

(*b*) The Free University This was established in 1880 in accordance with and to maintain the principles of the Reformed Faith it is ruled on somewhat the same principles, but has a Committee of Supervision instead of the College of Rectors of the four other universities, and no faculty for mathematics and physics

Administration By laws enacted 28th April 1876 and 22nd May 1905 the general government and administration of the three State universities and the Amsterdam Communal University is combined and entrusted to a College of Rectors consisting of twelve professors three for each of the universities Each university has its own College of Curators, consisting of six of its members and also a Senate, which is under the direction of a *rector magnificus* a secretary and four assessors

Instruction In each university, instruction, divided into lessons and colleges is entrusted to professors *ordinarii* and *extraordinarii*, *lectors*, and *privat docents* (coaches) For this instruction the following faculties are established (1) Divinity, (2) law, (3) medicine (4) mathematics and physics, (5) letters and philosophy

Examinations These take place in the following subjects Divinity, jurisprudence and law, political science medicine, mathematics science, philosophy and literature The latter includes Classics, Semitic literature, Netherland literature, Sanscrit, Arabic the language and literature of the East Indian Archipelago the Malayan and the Javanese language and literature and the history, antiquities institutions morals and customs of the peoples of the Malayan race

The professional stipend is fixed at 6 500 guldens for the first two years then at 7,500 guldens, and after two years at 8,500, and 9,000 after a further two years without any additions from fees or otherwise Retirement is compulsory at the age of 70, with a maximum of half a stipend

J H H

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NEUCHÂTEL UNIVERSITY—This was founded in 1909 with faculties of literature science theology and law A yearly course is also provided in medicine Previously to its establishment an institution for higher teaching had been in existence for about 200 years The teaching of philosophy and literature had been established early in the eighteenth century and in the nineteenth century (1838) an academy was established to provide public courses of instruction preparing students for the univer sities In 1841 professors of arts law and science were appointed and degrees were conferred in arts and science The academy was closed from 1848 to 1866 and on being re opened new departments were added and a few years later it became a cantonal gymnasium or higher school Further extensions were made and new buildings erected before in 1909 the academy was raised to the rank of university An important feature of its work during the last forty years has been that of the Séminaire de Français moderne pour Étrangers, which is very popular among foreign students Women are admitted as students and hearers on the same conditions as men and a few attend the university courses Degrees of Bachelor Licentiate and Doctor are conferred the first two after written and oral examinations and the last as the result of an oral examination and the publication of a thesis In July and August a holiday course in modern French is held for foreigners The language used in teaching is French

NEW ATLANTIS, THE.—(See Utopias, Educational)

NEW BRUNSWICK, EDUCATION IN.—(See Canada, Education in)

NEW ENGLAND COLONIES, EARLY HIGHER EDUCATION IN.—The spirit which the English grammar schools had developed in England accompanied the Pilgrim Fathers (1620) and their successors in New England Even the physical discipline of the long hours of school-work and the patience required for the Latin compositions were a source of strength (to the successful pupils) and the deliberate aim of religious observance and instruction in Christian principles often tended to produce Puritanic strength of character Thus, when the early emigrants started social organization in America they were free to discard every old institution of the England which they left behind unless they felt it essential to progress They could have begun a school system *de novo*, excluding the classics and including modern subjects only But the schools they established in their main interest and at their best were grammar schools In 1622 Brinsley (*q v*) wrote his account of the method of classical instruction, professedly for "all ruder countries" including specifically Virginia and the Summer Islands The first grammar school founded (though not the first planned) in New England was the famous Boston 'Latin School' in 1635 established in response to the appeal of the citizens, who voted that a certain brother Philemon Purmont shall be instructed to become schoolmaster It is uncertain whether he actually took up the post The "richer inhabitants' provided the money and amongst the contributors were Sir Harry Vane and John Winthrop Daniel Maude M A of Emmanuel College Cambridge is the first master known as teaching at the Boston Latin School By 1649 the General Court of Massachusetts had set apart three of the islands in Boston Harbour for the maintenance of the school as well as a further allocation of land elsewhere Native Indian children at any rate, were to be taught free John Harvard who had settled in Massachusetts in 1637 and died in 1638 bequeathed half his estate and his library for a college at Cambridge (Massachusetts) Harvard was probably a pupil of St Saviour's Grammar School Southwark and afterwards of Emmanuel College Cambridge (See HARVARD UNIVERSITY) Emmanuel College may almost be described as a "feeder of the New England Colonies and of their education So it happened that Boston Latin School and Harvard College set the old English grammar school tradition "It was classic culture' said Bishop Phillip Brooks which bound together "the Boston School and the Cambridge College' and if it is true that the 'destinies of Boston have been largely affected by the establishment of the Latin school it may also be added that the reactive influence of Harvard learning has had high significance for Great Britain

Ezekiel Cheever. The typical figure of Ezekiel Cheever is outstanding in the early American education Cheever is said to have been a pupil of St Paul's School London In America he first was schoolmaster at New Haven where he opened the first school in 1641 and was paid out of the common stock of the town In 1651 he moved to Ipswich (U S A), in 1661 to Charlestown, teaching in the grammar schools of these towns In 1670 he was solemnly presented with the keys of the school and taught there for thirty-eight years, altogether he was master for seventy years Cotton Mather called him in his funeral sermon, 1708 an Old English Christian, "that was as Venerable a Sight as the World since the Days of Primitive Christianity has looked upon"

In 1671, that educational prophet as well as apostle to the Indians, John Eliot (*q v*), roused Roxbury so that it "could not live quietly without a free school in the town'

Massachusetts as early as 1647, passed the famous Act providing that every township of fifty householders should appoint one voluntary schoolmaster whilst every township of 100 families should set up a grammar school "the master thereof being one to instruct youth for the University" This was the beginning of State organization of education Dr Elmer E Brown shows how Massachusetts Connecticut, New Hampshire, and Maryland "hereby kept up some sort of colonial system of education down to the time of the separation from the Mother Country 1776 In theory if not in practice these schools offered instruction in Latin and pointed to the higher education' Mr Eggleston describes the passage of English ideas of culture across the Atlantic, and points out that though Benjamin Symmes in Virginia was the first to bequeath an educational endowment for schools in 1634 it was not till 1693 that the William and Mary College was established William Penn's Public School of Philadelphia was definitely arranged in 1701 [For the more elementary education in the New England Colonies see JOHNSON, CLIFTON, *Old-Time Schools and School Books*] F W

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[The bibliographical references in both these books are admirable]

NEW SCHOOL, THE — (See EXPERIMENTAL EDUCATION)

NEWFOUNDLAND, EDUCATION IN —The management of the schools of Newfoundland is largely under the direction of the religious denominations The central administrative authority is the Governor in Council The special duties connected with the educational system of the colony are performed by the Colonial Secretary a Cabinet Minister Under the Colonial Secretary are five superintendents of education who represent the leading religious denominations There are two superintendents for Roman Catholic schools, one for Harbour Grace and one for the rest of the colony one superintendent for Church of England schools one for Methodist schools and one for Salvation Army schools These five superintendents are appointed by the Governor in Council, and usually nominations are made by the individual denominations interested The chief pastors of Congregational and Presbyterian churches perform the duties of superintendents of their own schools without being appointed by the Governor in Council The schools of Protestant organizations other than those named are supervised by the superintendents of the Church of England and of the Methodists

Under the general regulations of the Governor in Council, each superintendent has full control of the schools of his own denomination They are the official administrators of the schools, and they also inspect all the schools, academies, colleges, and

training institutions of their respective denominations that receive aid from the Government The superintendents are members of the Civil Service and they report annually to the Legislature in regard to the schools under their charge

A " Council of Higher Education " consisting of thirty members is appointed by the Governor in Council Superintendents assistant superintendents and head masters of denominational colleges are *ex officio* members of this Council The other members are appointed for a period of three years It is an examining body for the higher institutions of learning, and awards diplomas prizes and scholarships to successful candidates One of the scholarships enables the holder to attend a British or Colonial university for three years

Male teachers are required to pass one of the Council examinations before writing on their final examinations for certificates of qualification as teachers Boards of examiners for teachers' certificates are appointed for each religious denomination by the Governor in Council Each board consists of three or five members The superintendents are chairmen of the boards of examiners for their respective denominations The boards of examiners determine the course of study for pupil teachers and the length of the period of their training The highest grade of teacher's certificate granted in the Colony—the degree of Associate of Arts—is granted by the Council of Higher Education

Administration, Cost, and Attendance School districts are not often coterminous for the different denominations They are arranged so as most fully to suit the convenience of the children of each denomination and they may be changed by the Governor in Council on the recommendation of the superintendents

The local boards in each district are appointed for each denominational school by the Governor in Council The senior or superior clergyman in each district must be a member of the local denominational board The local boards have no authority to levy taxes but they have control of all school funds granted for their respective denominations The local boards appoint teachers and pay them They must report annually to the superintendent of their respective denominations The Methodist Church of England and Roman Catholic school boards are much more numerous than the schools of other denominations and they rank numerically in the order named The Methodists the Church of England the Roman Catholic Church the Presbyterian Church and the Salvation Army conduct colleges in St John's These colleges are conducted by boards nominated by the respective denominations but appointed by the Governor in Council In sparsely settled districts the different denominations may unite to organize a school The board of the leading denomination manages the school in a union district

The cost of education is almost entirely borne by the Colonial Treasury Grants are paid for the following departments of educational work For general education purposes for sparsely populated localities for higher education in districts outside St John's for special districts, for the maintenance and for the training of pupil teachers for college education for industrial education, for scholarships etc for inspection of schools, for the pension fund of the teachers for the work supervised by the Council of Higher Education, for repairing and equipping schools, and for aiding disabled teachers There is a special " augmentation grant of $77 500, divided proportionally among the different religious bodies according to population for the purpose of increasing the salaries of teachers The amount of this special grant depends on certificate and length of service At least nine tenths of the money received by each school district must be paid for the teacher's salary

No local taxes are levied but fees may be charged when necessary If a local board has in any year more money than it needs it has authority to assist some poor school of its own denomination with the balance

Though boards of education rank in numerical order—Methodists first Church of England second and Roman Catholics third—the registered attendance does not follow the same order The attendance shown in the last report shows Roman Catholics 16 791 Church of England 16 425 Methodists 15 345 and Salvation Army 2 378

Religious instruction is one of the regular subjects in the course of study in the schools and pupils are regularly examined in this subject by the superintendents when they visit the schools

Teachers who have taught thirty years or more and who have reached the age of 60 years are entitled to retire on a pension amounting to two thirds the annual salary received during the ten years previous to retirement The salary basis during the ten years must not include fees or perquisites J L H

NEWMAN, CARDINAL—John Henry Newman was born in 1801 and died in 1890 His father was a London banker his mother the descendant of French Protestants He went to school at Ealing in 1808 under Dr Nicholas and remained there till he went to Trinity College Oxford at the end of 1816 He did not actually reside till June 1817 the next year he gained a scholarship He was elected Fellow of Oriel in 1822 and was made honorary Fellow of his old College in 1877 He was for a time tutor of Oriel but his chief work up to 1845 was done as Vicar of St Mary's Oxford where his unique powers as a preacher exercised wide influence and as one of the chief writers of *Tracts for the Times* a series of papers ' on the privileges of the Church and against Popery and Dissent ' written from the point of view of an English Catholic After his secession to the Church of Rome he published several works explaining and defending his new position the most famous being *Apologia pro Vita Sua* (1864)

As an educationist he may be considered in the light of his own training his writings and his personal services to education He went to Oxford too young and " he was not twenty when he went in for the final examination whereas the usual age was twenty two (*Autobiographical Memoir*) Thus he obtained only low honours but in winning a fellowship at Oriel he showed how his powers had matured and how his university training had been fruitful This had been mainly in the ancient classics but also in mathematics history and general literature He " read books made ample analyses and extracts " These subjects and this method he continued throughout life to advise for others He was not entirely satisfied with the Oxford system considering (in 1826) that the tutors saw too little of the men and that there was not enough direct religious instruction But he remained to the end of his life a devoted admirer

and advocate of Oxford education, and he suffered many things for his persistent endeavour that Roman Catholics should obtain its benefits

Ideas on University Education. His opinions on education are to be found scattered up and down his writings from his familiar *Letters* and his novel *Loss and Gain* to his sermons and historical essays but they are summed up in his work on *The Scope and Nature of a University Education* (1859) republished and now best known as *The Idea of a University* This "gave an impulse to the comprehension of true university culture which had a very great effect in stimulating the reforms which soon afterwards took place in the universities of Oxford and Cambridge [and] enforced with the utmost power the true purpose of liberal education that it is a pursuit of knowledge for the sake of knowledge and not for the value of any of the fruits or applications of knowledge however important" (R H Hutton) It was the width of education as distinct from mere book learning which seemed to him the main benefit of a university In his own words (*Scope and Nature* Preface) "The force the steadiness the comprehensiveness and the versatility of intellect the command over our own powers the instinctive just estimate of things as they pass before us' make 'real cultivation of the mind and the intellect properly trained makes itself felt "in the good sense sobriety of thought reasonableness candour self command and steadiness of view which characterize it developing in some a talent for philosophic speculation in others habits of business, sagacity and power of influence The first step in intellectual training is to impress the idea of science method order then of "rule and exception of richness and harmony Critical scholarship is a most important discipline so also mathematics following upon grammar Method exactness accuracy are to be striven for throughout and thus the scholar will be "initiated into the largest and truest philosophical views' Newman strenuously urged that the study of religion and theology was essential to a thorough education and held that "Catholicism is the strength of religion as science and system are the strength of knowledge (*Life* i 415) In *An Essay in Aid of a Grammar of Assent* (1870) he continued the study of 'the mental operations underlying the processes of Apprehension Inference (whether formal or informal) Assent and Certitude and laid special stress on the function of conscience which he described as not only a moral but an emotional sense implying the existence of One to Whom man is responsible He declared that his aim was "to show that a right moral state of mind germinates or even generates good intellectual principles' (*Life* ii 270) Perhaps his whole view of mental training is best expressed in the words which at his own desire are inscribed on his tombstone *Ex umbris et imaginibus in veritatem* His own experience was chiefly derived from Oxford from the Birmingham Oratory (established 1847) from the Roman Catholic University at Dublin (1854–58) and the Edgbaston School (1859 onwards) His struggle to win permission from the Roman Catholic authorities for their students to attend the English universities only attained full success after his death W H H

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NEWNHAM COLLEGE.—The history of Newnham College begins with the opening, in 1871, of a house in Regent Street, Cambridge, with Miss A J Clough in charge and five students as inmates The students came to Cambridge to avail themselves of the lectures arranged shortly before by members of the University for the benefit of women who sought opportunities of study beyond ordinary school standards From this beginning has developed the present College with its four halls library, and lecture rooms standing in a spacious garden with tennis courts and fields for games close at hand, and an observatory with an equatorially mounted telescope in one of the fields Two laboratories for chemical and biological work respectively belong also to the College There are at present over 240 students in residence, also about twenty older women (for the most part old students), who are lecturers fellows or tutors of the College Miss A J Clough became the first Principal, and held that office till her death in 1892

Mrs Henry Sidgwick, who was her successor, retired in 1910, and was succeeded by the present Principal, Miss Stephen

It was in 1875 that the first of the present halls, now called Old Hall was built and, the number of students steadily increasing Sidgwick Hall was opened in 1880, Clough Hall in 1888, Pfeiffer Buildings in 1892, Kennedy Buildings in 1895, and Peile Hall in 1910

Since 1880, women students have been admitted to the examinations for the Honours degree, following the same courses as the undergraduates who take these examinations and in many cases sharing in the teaching given to them

The founders and friends of the College have included many distinguished members of the University and residents in Cambridge Among them, to mention a few out of many names are Professor and Mrs Sidgwick Miss A J Clough and Miss Marion Kennedy Professor and Mrs Adams, Dr and Mrs Bateson Professor Cayley Mr Coutts Trotter Dr Kennedy Dr and Mrs Peile, also Mr and Mrs Yates Thompson the donors of the library

The students have responded fully to the efforts made for their benefit In all the Triposes some have distinguished themselves by gaining high places Later in their careers some have carried on their studies with the help of Fellowships and studentships and have produced work considered by experts to be of high interest and value Others have turned what they learned at College to good account in public service of various kinds and in private philanthropic undertakings

The number of old students is at present about 2 450

The friends of the College tracing its course from its beginning to the present time feel that prophecies of evil made by opponents in early days have been signally refuted and regard their hopes as to the beneficial effects of advanced education for women as eminently justified K STEVEN

NEW SOUTH WALES, EDUCATION IN.—The Colony first founded in Australia and still the most wealthy and populous is the State of New South Wales Up to 1851 it also included the vast territories which now form the States of Victoria and Queensland The history of the development of its system of education is of special interest, and will accordingly be briefly outlined

Elementary Education. Although in the early years the Governors of New South Wales had repeatedly called the attention of Ministers at home to the desirability of taking steps to provide education for the rapidly increasing Colony which in 1802 contained over 1 000 children their representations were neglected In this year the first school was built in the Hawkesbury district, the money was provided by the Crown but the settlers bound themselves and their heirs to pay an annual rate of 2d per acre on all lands held by them from the Crown such rate to be used for the maintenance of the teacher Thus school-rate was actually levied in Australia before it was even contemplated in Great Britain

In 1810 the practice was adopted of granting State aid to schools established by the churches the money being derived from Customs dues and applied mainly for the payment of teachers salaries At this time the schools were almost exclusively Anglican but as the system developed and other sects founded schools a special board was appointed under Government authority containing one representative each of the Church of England Roman Catholic Presbyterian, and Wesleyan bodies to receive the funds granted by the State and to arrange for their distribution Several attempts were made to set up a national system but the supporters of the denominational schools were strong enough to defeat them until the year 1848 when a Board of National Education was appointed At this time when the population of the State was 260,000 there were 12 000 scholars, while the State-aid amounted to £8 450 The establishment of the National Board gave a great impetus to the formation of new schools and by 1850 forty three had been founded while fifty two others were in process of formation In Australasia the term 'Public School' is used chiefly to denote a school supported by public funds for the purpose of primary education Until the passing of the New South Wales Public Schools Act 1867 the National and the Denominational Boards existed side by side both supported by public funds and competing with one another in the work of education The position was clearly very unsatisfactory

By this Act a Council of Education was appointed consisting of five members responsible for the expenditure of all money granted by the State for the purposes of primary education and empowered to make regulations regarding the same which had all the force of law unless expressly revoked by Parliament Four classes of schools were recognized as eligible for public support (1) Public schools regularly attended by twenty-five or more children, (2) denominational schools complying with the regulations regarding the number of pupils the condition of the buildings distance from public schools instruction and inspection (3) provisional schools in districts where less than twenty-five children were available (4) half-time schools in sparsely settled districts where the teacher divided his time between two small schools attended by ten or twelve pupils only The secular instruction was required by this Act to include religious teaching, general in character and free from all sectarian bias Sectarian teaching was however allowed but it was required to be given by an outside teacher, generally a clergyman, in the denominational schools such instruction formed a part of the duty of the ordinary staff A certain amount of local control not extending, however to the appointment of teachers, was handed over to National Education Boards consisting of not less than three members and appointed directly by the Governor on the recommendation of the Council of Education. In 1867 there were 259 National schools with 19 641 pupils, and 310 Denominational schools, with 27 986 pupils

Up to 1875 the first condition for the erection of a school was that one-third of the cost of the building and the equipment should be provided locally, and naturally the provision of needed accommodation was often delayed, after this date the entire cost was provided out of the public funds

The gradual recognition of the fundamental importance to the State of a sound system of education, and hence the necessity for national control, led the Government to abolish the Council of Education by the New South Wales Public Instruction Act 1880 and to entrust its affairs to a State department under a Minister responsible to Parliament At this time when the population of the State was 740 000, the number of schools had increased to 1 220 with 101 534 pupils in attendance By the Act all aid to denominational schools ceased after 1882 attendance was made compulsory between the ages of 6 and 14 years for seventy days in each half-year if the child lived within two miles of the school and this laxity was allowed up to 1915 Secular teaching including general religious instruction was to be given for five hours per day although one hour might be set apart for special religious instruction by a religious teacher of any denomination to the children of parents who did not object The school fees which until now had varied in amount and had formed part of the teacher's remuneration were fixed at 3d weekly and the amounts received passed to the State School fees were not finally abolished until 1906

In a country where much of the population is widely scattered special attention has necessarily been given to education in the back blocks This has been partly supplied by means of the provisional and half-time schools already referred to moreover yearly subsidies and school equipment are given by the State to any school which may be erected by the parents of a small settlement In 1918 subsidies were paid to 658 schools of this character with an enrolment of 4 444 pupils

To prevent as far as possible the disadvantages that attend small schools provision is made for the conveyance of children in isolated districts This plan was first adopted in 1904 in the case of twelve central schools and in 1912 it was extended to eighty An interesting experiment which seems well adapted to Australian conditions is the equipment of travelling schools each comprising a van carrying a tent for the teacher and another for the school house together with necessary books and apparatus The satisfactory results obtained should lead to further expansion

The curriculum was remodelled in 1916 The new course is completed normally at the age of 12 and those who qualify for secondary education will therefore gain two years more than under the old system For those who spend the last two years of the compulsory period in the primary school a curriculum has been arranged which has regard to the prospective occupation of the child and is similar to that followed in the Scottish supplementary classes

Systematic medical inspection of schools was undertaken in 1913 and during 1914 over 90,000

children were examined, more than 16 000 receiving treatment from the staff of fourteen doctors and six nurses A travelling school hospital, staffed with two doctors a nurse, and a dentist and a travelling ophthalmic clinic are used for the medical treatment of children in isolated districts

Secondary Education Until recent years higher secondary education was virtually in private hands a few of the more important schools receiving support from public funds Among these the Sydney Grammar School founded in 1825 is pre-eminent This had in 1918 an enrolment of 706 and received an annual State subsidy of £1,500 the cost per pupil being over £23 A number of public schools however have secondary departments providing instruction up to the standard of the Senior and Junior University Examinations and in certain cases up to matriculation These were re-organized in 1913 so as to provide a two years' course of special vocational training They were then classified as commercial junior technical or domestic superior public schools the number of each class in 1918 being 24 24 and 45 respectively Public high schools have also been established offering preparation for the public service the professions, or for the university In 1918 there were twenty-two of these with a total enrolment of 3 139 boys and 2,408 girls, and to meet the demand for this type of secondary instruction four additional intermediate high schools providing a three years' course with a minimum of two years have since been opened in Sydney with a total average attendance in 1918 of 459 boys and 288 girls In the smaller country towns seventeen schools providing similar courses and called district schools, have been founded which it is hoped will serve to secure an adequate supply of teachers who have not only had a secondary school training but have also the advantage of a rural upbringing and a rural outlook The privilege of free education at all State secondary schools is now gained by obtaining at the conclusion of the new shortened primary course the qualifying certificate granted jointly on the pupil s school record and on the results of a special examination In the case of pupils wishing to proceed to high schools however parents are required to give a guarantee of four years attendance The State awards over 1 200 bursaries and scholarships to the pupils most successful in the above examination The leaving certificate given on satisfactory completion of the four years course is accepted by the university as entitling to matriculation while on the results of the leaving examination together with the school record university exhibitions carrying exemption from fees are granted by the State on the basis of one for every 500 of the population between the ages of 17 and 20

Agricultural Education. Considerable attention has been paid of late years to agricultural education throughout the State As far as the primary schools are concerned this has taken the form of Nature study and school gardening, and has been superintended by an itinerant teacher who visits the schools gives advice to the teachers with reference to their work and holds special classes for their instruction Secondary education is being carried on with excellent results at the Hurlstone Agricultural High School, attended by about 100 boys, where, with a farm of 26 acres, sound general and theoretical instruction is given, together with a surprising variety of practice This branch of the system finds a worthy culmination in the Hawkesbury Agricultural College, situated about 40 miles north of Sydney, with a large farm of 3,440 acres, about 1 000 of which are under cultivation and a smaller farm of rich alluvial soil of 116 acres In 1914 there were over 170 students in residence, while a short winter school of four weeks was attended by over 400 farmers The inclusive fees are £33 for the first year, £20 for the second, and £10 for the third Lower agricultural education is carried on at the Farm Apprentice Schools in connection with the four Government experimental farms, where the training mainly in farm operations, is intended for the benefit of those who have had no previous experience and can only devote twelve months to the course The inclusive fee is £5 for the first half-year and if a good report is received, no charge is made for the second half year There are also three farm schools where the course is of two years duration and includes theoretical as well as practical instruction the fees being £15 for the first year and £10 for the second

Training of Teachers Until 1905 the ordinary avenue to teaching in the primary school was through the pupil-teacher system The pupil-teacher entered on his four years course at from 14 to 16 years of age and then either proceeded to the training college for a course of from one to three years, or else commenced teaching as an assistant or even as head teacher of a small country school It was recognised however that to secure the best results training should precede teaching and provision was made for the gradual extinction of the pupil-teacher system Since 1910 there have been no pupil-teachers in the service and in future no one may be appointed without at least six months' professional training The Teachers College was long conducted in connection with Blackfriars Public School Sydney but a new Teachers' College has now been erected in the university grounds, and a fair proportion of the students now take university as well as professional courses In 1918 there were 859 students, of whom 616 were women Short courses of six months were attended by 165 students

Private Schools Both secondary and primary private schools mainly denominational in character, are numerous In 1907 there were 806 such schools with nearly 47,000 pupils in attendance in 1913 733 schools with 64,591 pupils

The University of Sydney was founded in 1850 but it was some years before the main building was erected at a cost of £80 000 on a magnificent site of 128 acres Subsequently, buildings for the Medical School were provided at an equal cost and lately a well-equipped engineering department has been added The buildings of the university, which will bear comparison with the finest modern colleges of Great Britain, are largely the result of private munificence the Challis and Russell bequests alone amounting to more than £300,000 The Government grants to the university in 1918 amounted to £67,165 and its total income to £114,834

Technical Education. This received its first great impetus by the founding of the Sydney Technical College in 1892 and this was followed by the establishment of other technical colleges in the chief country towns In 1913, as a result of conferences between the educational authorities and representatives of employers and employees, the system throughout the State was re-organized The teaching now provided is either trade instruction or

higher technical education the former being given in special trades' schools or in the trades' departments of the technical colleges, while the latter is the chief function of the technical colleges at Sydney and Newcastle Those only are eligible for technical instruction who can give evidence of satisfactory preparatory training and are actually engaged in a trade as apprentices or journeymen A system of report cards maintains a close correlation between the training in the workshop and that in the school At the close of apprenticeship after examination of the school and workshop records trade competency certificates are issued by the Advisory Committee of Employers and Workers to those who are considered to be qualified as journeymen to receive the journeyman s full wage J H H

NEW TESTAMENT, THE PEDAGOGY OF THE —Any study of the principles and methods of teaching disclosed in the New Testament is affected by two considerations The first is that there are few direct references The controlling purpose of its writers was the propagation and exposition of the faith As a consequence education in its broad sense nowhere receives any specific exposition Nevertheless as the New Testament writings and especially the Book of the Acts and the Epistles reflect the ethical and social ideals of the Christian community and as their counsels bear upon human relationships there are allusions to education which are sufficient to enable us to discern the chief features of the pedagogy of the time The second consideration is that the New Testament ideals and methods were a heritage with certain modifications from the Hebrews With the exception of Luke all the writers were Jews They lived in a Jewish environment and clung tenaciously to Jewish customs in worship and in modes of life (Acts iii 1 Acts vi 9 Acts xviii 21) But Hellenism had invaded the freer thought among the Jews A gymnasium on the Greek model had been established in Jerusalem The Greek ideal of education as a physical and intellectual culture swayed the more liberal minds Yet the people as a whole and the Christian community with them clung to the Hebrew conception Paul distinctly asserts the Hebrew idea in 1 Timothy iv 8 Bodily exercise (*σωματικὴ γυμνασία*) profiteth but a little but godliness (*εὐσέβια*) is profitable for all things When we remember the debt of the New Testament ideal to its Hebrew heritage and take into account the change in outlook and in geographical situation we can reach a just conception of the pedagogy of the New Testament

Everywhere there is apparent a sense of the necessity and value of education and a deep reverence for the teacher The teaching gift and office are held in the highest regard (1 Tim iii 2 2 Tim ii 2) The teacher is the moral and social aristocrat of the time Education is therefore universal and both men and women have almost equal rights With the Hebrews the son was given a higher education than the daughter In Proverbs xxxi we have the picture of the Hebrew girl's acquirements and they are largely domestic In the New Testament with its principle that "In Christ Jesus there is neither male nor female" the directions are no longer given to 'sons' but only to "children' The presence in the Christian Church of so many women such as the daughters of Philip, Euodias Syntyche the elect lady of 2 John, and the Jezebel of the Book of Revelation are proofs of the higher status and more liberal education of women. The ideal was distinctively practical Its object was always moral, and it was rooted and grounded in religion Scholarship, for the sake of scholarship was almost unknown Education was an equipment for life, and for the fulfilment of moral obligations The one clear purpose for any kind of scholarship was to equip one for being a teacher 'The things that thou hast heard of me the same commit thou to faithful men who shall be able to teach others also (2 Tim ii 2) As a consequence the end in view was discipline rather than learning Paul asserts this fact when he writes, "Bring up your children in the discipline and admonition of the Lord [*ἐν παιδείᾳ καὶ νουθεσίᾳ κυρίου*] (Eph vi 4) For the same reason education included the teaching of a trade usually the occupation which was hereditary in the family As Jesus was a carpenter Peter a fisherman Paul and Aquila and Priscilla tent makers so each child was taught some trade by which he could earn his living

The subject of direct instruction was always the Scriptures These were at first the Scriptures of the Old Testament To the Scripture as a text book the New Testament gives an emphatic adherence From a child thou hast known the holy scriptures which are able to make thee wise unto salvation (2 Tim iii 15) so Paul writes to Timothy His argument to the Roman Christians emphasizes the same truth "Thou approvest the things that are more excellent being instructed out of the law (Rom ii 18) Luke confirms this use of the text book when he writes That thou mightest know the certainty of those things wherein thou hast been instructed" (Luke i 4) The Jewish law and history the great Psalms and the messages of the prophets along with the traditions of Christ s life and the exposition of Christian truths made up the subjects of education during New Testament times

The Home and the School In one particular the ideal differed largely from the ideal of to day The State as a State took no concern with the education of children The supreme authority and the responsible teacher was the parent Yet such was the obligation upon the parent that education was morally compulsory In the Jewish declaration This people who knoweth not the law are cursed (John vii 49) the New Testament writers would acquiesce As a consequence the first school was always the home and the first teachers not merely by unconscious and inevitable word and deed but by direct instruction were the father and mother "And ye fathers (Eph vi 4) writes Paul laying the obligation entirely on them Yet the mother obviously had her place and in the case of Timothy whose father was a Greek his education was directed by his mother Eunice and grandmother Lois (2 Tim i 5) But there is no doubt that the New Testament community followed the Hebrew mode in establishing schools The Hebrew synagogue was rather a school than a place of worship for worship in its complete expression could be performed only in the temple, All the references to the Synagogue imply that it is a place of education and the verb *διδάσκειν* to teach is always used of its chief function (Matt iv 23, xiii 54 Luke vi 6) But the synagogue had also a school for children such as Jesus attended in Nazareth when he "grew in wisdom It is undoubted that the Christian community when

it was driven out of the synagogue set up its offices of teaching and instructed its children by persons specially qualified We therefore find that the "teacher" is one of the list of recognized officers apart from the apostle and evangelist and pastor (1 Cor xii 28 Eph iv 11) While no doubt he taught the people generally Church history beyond New Testament times discloses the fact that the teaching of children and catechumens was an established and recognized part of the teacher s service The Christian Church meeting in New Testament times was largely a Bible School where a recognized teacher explained the meaning of the Scriptures and enforced their lessons

Methods The methods of teaching were determined by the lack of books The Scriptures constituted the sole text book but there were few copies of it and in all likelihood the only complete copy was the synagogue roll The method of teaching was therefore oral The teacher usually sat with the scholars sitting round him literally "at his feet (Acts xxii 3 Luke ii 46 Luke x 39) The teacher read the sentence and the scholars repeated it aloud in unison time after time until it was imprinted upon the memory This method explains the fact that reading was usually aloud (Acts viii 30) and it also explains those marvellous memories which kept long passages and "endless genealogies' (1 Tim i 4) along with more easily remembered illustrations parables and aphorisms clearly in the mind In this way the eight faithful sayings to be found in 1 and 2 Timothy and perhaps the creed the earliest extant in 1 Timothy iii 16 were committed to memory and became a *catena* of Christian truth *Memoria excolendo augetur* The Eastern memory excels the Western simply because it is cultivated and relied upon

But besides repetition the method of question and answer both on the part of teacher and taught was constantly practised This method is disclosed in Luke ii 47 where Jesus sat in the midst of the doctors not displaying any supernatural knowledge but amazing His teachers by "His understanding and answers That this catechetical method was universal is proved by the recurrence of the word from which our word *catechize* is derived so frequently in dealing with instruction (Luke i 4 Acts xviii 25 1 Cor xiv 19 Gal vi 6)

A third method for older scholars was exposition and comment It was in pursuance of this method that the parables of Jesus and many of His more systematic utterances were spoken This was the mode of the Christian teachers in their assemblies (1 Cor xiv 24 James ii 2) By these methods two results were gained The first was that the scholars were taught to read and in some cases to write Evidently from Revelation xiii 18 elementary arithmetic was also acquired The second was that they were grounded in that knowledge which their teachers conceived to be the one essential of a true education W M C

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NEW ZEALAND, EDUCATIONAL SYSTEM OF. —From 1853 to 1876, New Zealand was partitioned into provinces with independent systems of government and education, and although a central administration was established in 1876, education will probably long remain handicapped by this early division The defect has been to a large extent repaired so far as primary education is concerned yet great want of uniformity still remains in several important directions and university education seems destined to be divided between four separate colleges with a multiplication of administrative and teaching staffs and a serious limitation of corporate student life

Department of Education The Act of 1877 created a central Department of Education, presided over by a Minister of the Crown and under the supervision of a professional officer now known as the Director of Education This Department is mainly concerned with the administration of the primary and technical branches and has entire responsibility for native and special schools As, however the secondary schools the university colleges and the University derive a considerable proportion of their revenue from parliamentary grants a certain amount of control is loosely exercised over them also either directly or through State representatives on the governing bodies Wherever grants have been made for the support of secondary and technical schools the Department has always inspected these but it was not until all primary inspectors were placed under its control by the Act of 1914 that it exercised immediate supervision over the elementary schools The Department undertakes the conduct of examinations for teachers certificates for entrance to the public service and for free places and scholarships (other than university) granted by the State It also issues monthly for free circulation in primary schools about 170 000 copies of a school journal providing reading matter that attempts to combine instructiveness with continuity each journal being published in three parts—to suit the attainments of pupils in the upper middle and lower standards

Primary Education In provincial days the primary schools were administered by an Education Board at the capital of the province, while certain powers were conferred upon local committees The sources of revenue were various, and comprised capitation charges on householders, rates, fees and donations the Provincial Government supplementing these by grants Religious instruction was provided in all the schools In 1878 these different systems were superseded by a national system which nevertheless retained many of the features of those that it replaced The general administration of a school was still left in the hands of its local committee, while a Board of Education for each education district comprising generally a province or part of a province, retained control of the inspectors and teachers, and disbursed the funds which were now almost entirely provided by the central Government The education was, however free compulsory, and entirely secular The Act of 1877 remained in force without material alteration until 1901 The country was originally divided into thirteen districts, but in 1916 this number was reduced to nine, and only local political influences prevented a still further reduction This will probably be brought about in the near future, for the general opinion is that division of control is detrimental to efficient and economic working

The education districts are divided into as many school districts as there are primary schools, and

in each of them a committee of from five to nine members according to the enrolment is elected by householders to exercise general control By the Act of 1914 the committees of an urban district may be replaced by a single district council elected on the municipal franchise and having the management of all schools within the urban area The powers of the committees in the matter of appointments which had previously been considerable were at the same time virtually taken away and placed in the hands of the Board acting on the advice of the inspectors As however the members of the Board are themselves elected by the school committees, one half of their number having to retire each second year the committees exercise considerable influence over its allocation of funds and general policy

Attendance is compulsory between 7 and 14 years of age but pupils who have passed Standard VI are exempt The attendance per cent reached in 1914 the high figure of 90 1 for the whole Dominion in 1918 it was 88 7 in face of the difficulties that arise in the many isolated districts this result compares very favourably with 88 8 for England Pupils on entering are placed in the preparatory department where the average age is 7 years 1 month and then pass through six standards—normally one in each year—to Standard VI where the average age is 13 years 11 months Pupils in this standard are examined by the inspectors and certificates of competency and of proficiency are awarded Those who obtain the latter are entitled under certain conditions as to age to free education for two years in the high or evening schools In 1918 nearly 74 per cent of the candidates were granted proficiency certificates but great inequalities in the award exist in different districts owing to varying standards among the inspectors

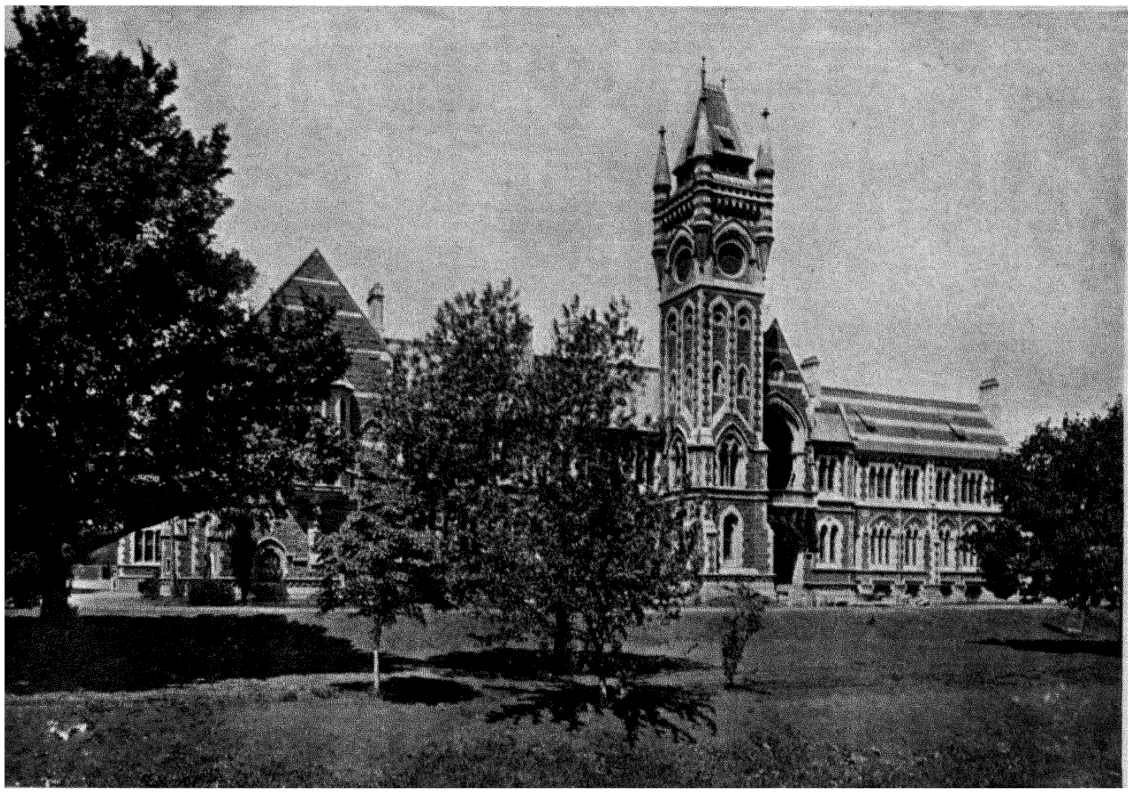
The curriculum has recently been revised but no attempt has been made to provide any element of vocational instruction except through manual training and domestic science Considerable attention has however been paid to these subjects classes in wood or iron work and in domestic subjects were held in 1918 in connection with 21 per cent of the primary schools the total expenditure thereon being £23 000 Elementary handwork, usually taking the form of paper and cardboard work and plasticine modelling is done in the lower standards at 66 per cent of the schools No religious instruction of any kind is allowed during regular hours but the buildings may with the consent of the committee be used for denominational teaching by other instructors before or after school

The schools are graded according to their average attendance thus (I) 9 to 20 (II) 21 to 35 (IIIA) 36 to 80 (IIIB) 81 to 120 (IVA) 121 to 160 etc (VIIA) 481 to 520, etc, to (VIII) 901 to 950 The following illustrate staffing and salaries. (I) Sole teacher £150 to £180 (II) sole teacher £180 to £240 (IIIA) head teacher £250 to £300—one assistant £140 to £160 (IIIB) head teacher £260 to £320—two assistants, £140 to £160 and £130 to £140, (VIIA) head teacher £470 to £500—eight assistants with salaries from £330 rising to £370 down to £130 rising to £140 The salaries of the staffs for all higher grades are the same as those of VIIA The annual increments are of £10 All teachers are graded according to marks awarded by the Inspectors on the following basis (maximum marks are in brackets) skill in teaching (40), personality and discipline (15), organization and management (15) environment (5) academic attainments (15), service (10) Additions to the above salaries varying in amount from £45 to £10, may be made according to the grading number of the teacher Married male assistants are entitled to a further payment of £30 and in special circumstances this sum may be paid to married female assistants also The ratio of female to male teachers is steadily increasing in 1918 it was 267 100 The average number of children per adult teacher (counting two pupil teachers as one adult) for schools over 200 was about 42 and for all schools 33 A Superannuation Fund was established in 1905 to which those entering the services are required to contribute a percentage of their salaries the amount depending upon the age at entry The State at present pays an annual subsidy to the fund of £17 000

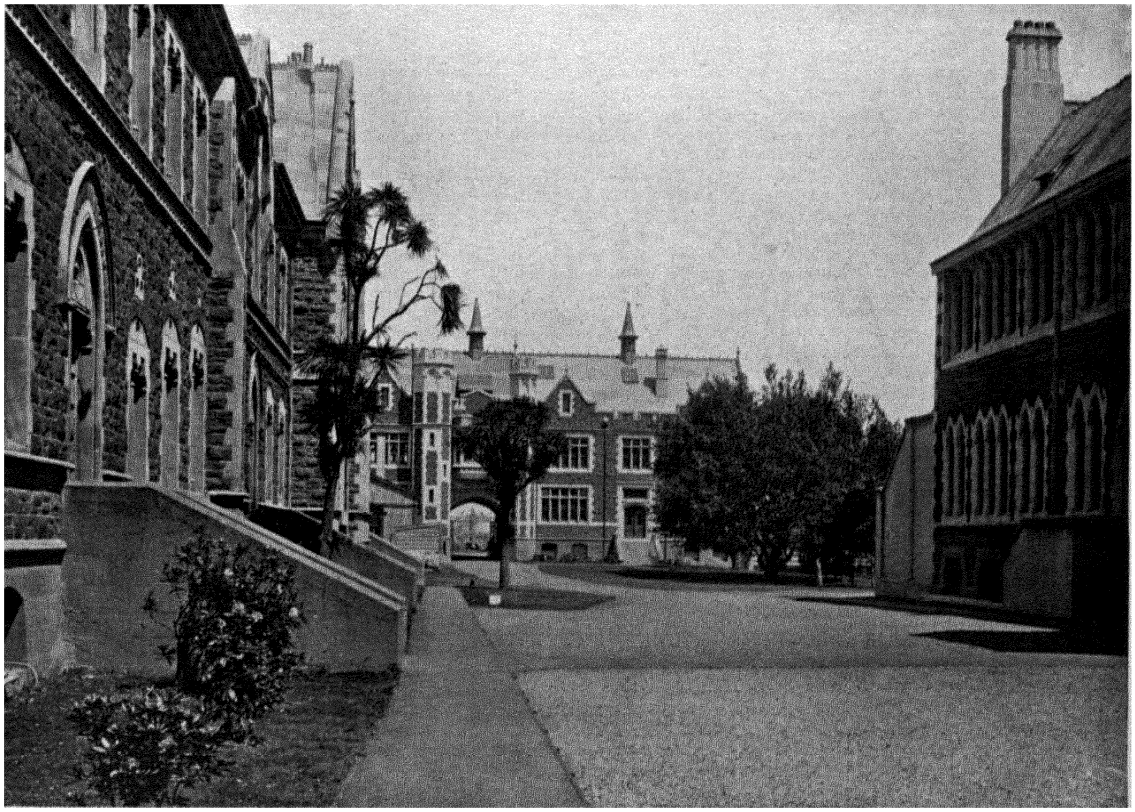
Medical Inspection Medical inspectors have been appointed for the whole Dominion who examine all children in schools of Grade III and upwards Instruction in medical inspection is given to training college students so that they may later assist in the work in their own schools The amount expended on this branch in 1918 was £6 200 A separate department was set up in 1913 to deal with physical education but it is intended that the two departments shall be amalgamated There are fourteen instructors who hold training classes for teachers and students and inspect the physical instruction as it is being carried out by the ordinary staff of the schools The expenditure for 1918 on this department was £4 292

Scholarship System In addition to the free places granted to holders of certificates of proficiency a well arranged scholarship scheme now facilitates the passage of capable pupils from the primary school to the university Scholarships are of three kinds—Junior Senior and University The first two are awarded to all candidates reaching a certain standard in the examination the standard being adjusted to provide approximately one scholarship for every 500 children in attendance at the public schools they are of the value of £5 and £10 per annum respectively together with a boarding allowance of £35 per annum if the scholar is obliged to live away from home The Junior Scholarships are open to primary school pupils not over 14 and the Senior to secondary school pupils not over 15 In 1918 796 scholarships were granted at a cost of £13 130 The University National Scholarships not exceeding twenty in number are tenable for three years and are of the value of £20 with free tuition and £30 boarding allowance These are competed for at examinations held by the University itself University bursaries entitling the holder to free tuition have been established also, to encourage prospective teachers to complete a course of university training In 1918 the amount expended by the State in University Scholarships and Bursaries was £7 962 From its own funds, and on the result of the same examination, the University awards a number of entrance scholarships, usually ten, of the same value as the national scholarships

Kindergartens. The only kindergartens maintained by the State are connected with the training colleges Each of the chief centres, however, has an association for the maintenance of a number of free schools To these associations the Government



Otago University Main Building



Photos by C. I. Armstrong

Otago University The Quadrangle

grants a capitation of £2 per annum on the average attendance with certain stipulations as to the minimum salaries to be paid and the amount of contributions from other sources

Higher Schools. Secondary education is provided by 35 secondary schools 29 being endowed of which 13 are for boys only 13 for girls only and 9 for both boys and girls 62 district high schools and 8 technical high schools The proportion of persons receiving some form of day secondary education is 1·38 per 10 000 of population

The endowed schools were founded either by the early provincial governments or by Acts of Parliament and derive part of their revenue from land reserves These had an average weekly attendance in 1918 of 8,220 pupils and of these 91 per cent were holding free places on account of which the State paid to the governing bodies £85 422 or £11 18s per head The average total cost per head was £13 6

District high schools are secondary departments attached to primary schools and are under the management of the local committee Most of these provide a two years rural course with a strong bias towards agricultural and domestic pursuits a few specialize for the public service examination or matriculation The average weekly attendance for 1918 was 2 254 and almost all of the pupils hold free places

The technical high schools are vocational schools providing in general four courses Agricultural Commercial Domestic Science and Industrial The average length of training is about two years and few pupils remain for more than three years The enrolment in 1918 was 2 747 of which nearly 54 per cent took a commercial 26 per cent an industrial and 14 per cent a domestic science course The capitation payments amounted to £32 474 or £12 56 per free pupil Apart from the voluntary contributions of local bodies these schools are entirely dependent on State support

After two years of secondary education when the period of the junior free place expires pupils may be awarded senior free places entitling them to further free education up to the age of 19 This privilege is usually granted on the recommendation of the principal of the school attended but may be obtained by passing the Department s Intermediate Examination

Agricultural Education During recent years considerable attention has been given in the primary schools to theoretical and practical instruction in horticulture This is usually conducted by the ordinary staff supervised by specially qualified itinerant instructors This work is undertaken at 1 390 schools

The district high schools and the agricultural departments of the technical high schools continue this course and provide instruction in dairy work, and in elementary agricultural chemistry and biology Where circumstances permit farm carpentry and blacksmithing, wool-classing and shearing are taught

The Lincoln Agricultural College well endowed by the Provincial Government of Canterbury, provides a two years course of higher education combined with instruction in the manual processes of the farm It has accommodation for fifty residents, with a home farm of about 800 acres and larger areas used for grazing purposes Matriculated students who have completed its course of training and spent a further year of study at a university college may take the examination for the degree of Bachelor of Agriculture

Training of Teachers. With few exceptions, teachers in the primary service commence their careers as pupil-teachers or probationers the latter being required to have a higher educational qualification than is necessary for the former The pupil-teacher is attached to a school for two or three years (the probationer for two years) during which he receives a salary of £65 with annual increment of £10 and boarding allowance of from £20 to £10, if obliged to live away from home A course of two years follows at one of the training colleges in the four chief towns Auckland Wellington, Christchurch and Dunedin These are maintained entirely by the Government, though under the control of the Education Board for the district, while at the training college the student receives free tuition and an annual allowance of £85 with boarding allowance of £25 when necessary In 1918 there were 500 students (85 men 415 women) in attendance and of these 452 were ex pupil teachers or ex probationers 33 had matriculated or passed some other university examination, but were without teaching experience 4 were graduates taking a one year course, 11 were uncertificated teachers of small schools To each college is attached a practising school including (1) a main mixed school (2) a model rural school under a sole teacher (3) a junior school (4) a class organized as the secondary department of a district high school (5) a class for backward children (6) a kindergarten Part of the training especially in English and education is taken at the University College but no regular scheme has yet been adopted The expenditure on the training of teachers (exclusive of buildings) amounted in 1918 to £59 921

Private Schools In spite of the great advantages offered by the State system yet on account of its secular character private and denominational schools are numerous There were 320 such schools in 1917 with a total enrolment of 25 491 171 being Roman Catholic with 18 257 pupils

Native Schools In 1917 there were 118 native village schools established by the State and attended by about 4 600 Maori children The course of instruction is similar to that of other primary schools but as English is a foreign language to the pupils it is necessary to pay special attention to this subject and less is accordingly expected in others The children are admitted below the age of 5 and may remain beyond 15 Nearly 5 000 Maoris also receive instruction in the ordinary State schools Ten denominational boarding schools provide secondary education for nearly 500 natives, some of whom proceed to the university

Technical Education This branch is on the whole well developed In addition to the technical high schools already referred to and the higher technical departments of the University Colleges, classes are conducted either by the Education Boards or by Technical School Boards The latter consist of representatives of the Education Board, together with representatives of local bodies, which contribute to the support of the classes for to this branch of education municipal and other bodies are allowed to devote some of their funds, and on all such donations the Government pays a subsidy of £1 for £1 Free places are tenable under certain conditions in the evening schools by holders of certificates of proficiency who take approved courses Since 1912, where the school committees

of the locality request it, the Education Boards have had power to make continuation and technical education compulsory but up to 1918 this has been done in only twenty three districts with a total enrolment of 1 324 The number of technical classes including college classes in 1918 was 1 965 and the number of students 16 910 The great majority were of course evening students and of these, 29 per cent took grouped courses of not less than four hours per week There are about sixty schools specially erected and equipped while in about seventy centres the classes are con ducted in the public schools or in rented buildings The total expenditure of the Government on technical instruction in 1918 was £85 259 at a rate of £4 3 per student

University Education The University of New Zealand founded in 1874 is merely an examining body that prepares courses and grants degrees on the results of examinations which it engages eminent scholars and men of science at British universities to conduct with the expectation that this practice will give status to its degrees There are four tea hing colleges the University of Otago Dunedin founded in 1869 with special schools of medicine dentistry mining and home science but with no power to grant degrees Canterbury College Christchurch founded in 1876 with special schools of mechanical electrical and civil engineer ing Auckland University College founded in 1882 with special schools of music and mining engineer ing Victoria College Wellington founded in 1897 with special schools of law and economics The University of Otago and Canterbury College received substantial endowments from the Pro vincial Governments and are in consequence fairly provided with buildings and equipment Victoria C ollege was recently erected at the expense of the State but the Auckland College is still for the most part housed in wooden buildings that date from 1854 In 1918 the incomes of the four colleges exclusive of special trusts were as follows Otago University £42 907 Canterbury College £30 847 Auckland University College £34 124 Victoria College £16 642 Of this the Government provided in all £39 932

In marked contrast to the older Australian universities higher education in New Zealand has benefited comparatively to a very small extent from private benefactions The University of Otago situated in a province predominantly Scottish and therefore alive to the value of educa tion has from time to time received recognition in this way but it seems generally true that all branches of education must in New Zealand look mainly to the Government for the means of their development

For further statistics relating to education in New Zealand, see AUSTRALASIAN EDUCATIONAL STATISTICS J H H

NEW ZEALAND, TEACHERS IN —New Zealand has an educational system of which the country is justly proud The Minister of Education has made regulations affecting not only the qualifications of teachers but the details of staffing and the salaries of the teachers There are five grades of certificate issued to teachers in the public elementary schools and seven grades of school according to the average number of pupils in attendance and involving sub grades The sub grades affect the number of the staff but not the grade of salary

Salaries of men teachers range from £120 to £370 for assistants and £130 to £450 for head teachers, in elementary schools The average salary for men is about £270 for women about £150 excluding schools where the average number of scholars is less than twenty these figures become £285 and £164 respectively

In secondary schools the average salary for head teachers is about £615 for a man and £434 for a woman, for assistant teachers £300 and £201 for a man and woman respectively The average of all salaries in secondary schools is about £274 as against £187 for elementary schools but substantial increases are expected in all schools in the near future

Contributions to the superannuation fund are deducted according to a sliding scale Pensions are compounded of one sixtieth of the total salary received during the years of contribution and one hundred and twentieth part of the salary received before 1906 but not before 1878 the minimum pension to be £52 per annum

Besides training teachers for the elementary and secondary schools New Zealand supplies teachers for various types of technical and special schools An interesting type of school, to which England has no parallel is the native school for Maoris Instruction is given in English not in Maori The teachers are almost entirely of European descent and possess one of the three lowest grades of certi ficate if any The average salary of the eighty six masters in charge of native schools is about £210 of the twenty one mistresses in charge £165 and of 122 assistants £115 with a lodging allowance of £30 in thirty nine cases As the majority of Maori children attend the ordinary schools as soon as they have a sufficient knowledge of the English language it is probably unnecessary to employ more highly qualified assistants in the native schools A C C

NICARAGUA, EDUCATION IN —Nicaragua is a small republic in Central America with a popula-tion of less than a million consisting of natives negroes and mixed races The white population numbers only a few thousands The religion is Roman Catholic Education is in a very backward state 356 primary schools providing for only about 25 000 children Secondary educa tion is carried on in ten colleges some of which are subsidized by the Government in the chief towns—Managua Leon and Granada About a thousand pupils attend these schools in which the course comprises draw-ing mathematics, several natural sciences and Spanish There are two universities—one at Leon the other at Managua—with faculties of law and medicine A national Industrial Commercial and Scientific Museum has been established at Managua

NICHOLAS, SAINT (*d* 867) —He was one of the great Popes of the Middle Ages who exerted power ful influence on the historical development of the Papacy and its position among the Christian nations of Western Europe He became Pope in 858 when Christianity was at a low ebb in Europe The Empire of Charlemagne had fallen to pieces Christian morality was despised many bishops were worldly and unfit for their office Pope Nicholas filled with a high conception of his mission proceeded to vindicate Christian morality to defend God's law against kings and dignitaries, and Church law against powerful bishops Long and severe conflicts

followed between the Pope and the bishops of France and Germany before the former succeeded in re-establishing Church discipline Another struggle to secure respect for the marriage laws brought him into conflict with great rulers including Charles the Bold of Burgundy and Baldwin Count of Flanders St Nicholas encouraged the missionary activity of the Church rebuilt and endowed several churches in Rome, and constantly sought to encourage religious life

NICHOLL, JOHN (1683-1765) —Born at Preston Capes in Northamptonshire became a pupil at Westminster School and in 1704 was elected to Christ Church Oxford where he took his M A in 1710 In 1714 he became second master at Westminster he was created D D by diploma in 1723 and became rector of Meonstoke Hants in 1728 From 1733 to 1753 he was head master of West minster School and his mastership was notable for the attention he paid to the religious life and instruc tion of his pupils The most interesting testimony to his zeal is afforded by the poet Cowper who though not favourably disposed towards public school education had affectionate memories of his life at Westminster School and records his impres sions of Dr Nicholl in one of his letters "That I may do justice to my place of education I must relate one mark of religious discipline which in my time was observed at Westminster I mean the pains which Dr Nicholl took to prepare us for confirma tion The old man acquitted himself of this duty like one who had a deep sense of his importance" Dr Nicholl was buried in Christ Church Cathedral where a monument giving a long account of his virtues was erected

NIETZSCHE, FRIEDRICH (1844–1900) —A German poet-philosopher born in Saxony and educated at Pforta the German Eton where he was one of the original members of the Germania Club founded to promote the study of art and literature He communicated many essays to the club papers, left Pforta in 1864 and continued his education at Bonn and Leipzig He became Professor of Classical Philology at Basel in 1868 and fought for the Germans in the Franco-German War To combat the rising German claims to superior culture he gave his famous public lectures in Basel 'On the Future of Our Educational Institutions" a fierce and bitter indictment of the German schools of the age—materialistic institutions where boys were taught how to get on and turn themselves into money making machines and how to be useful to the State Nietzsche compared this teaching with the standard of the ancient Greeks and tried to instil into his countrymen an artistic conception of life He saw that in German education culture was despised neglected and even lost sight of He contended that sufficient institutions exist for teaching how to succeed in life and in the struggle for exist-ence and that for the majority such teaching is necessary but tends to turn a civilized race into barbarians unless counteracted by real culture Men of genius should be taken away from the com-mon herd and trained in institutions apart from the distraction of commercial life They should be educated on Greek lines adapted to modern needs, and trained in lofty principles, high aims and good taste The lectures were delivered in 1872 and made some impression on thinking men, but on the German nation as a whole they produced little effect The thoughts contained in the lectures correspond closely to the protests of Matthew Arnold against the neglect in English education of culture as an ideal "The education of the masses cannot be our aim, but rather the education of a few picked men for great and lasting work" On this text, Nietzsche became practical, and outlined his policy to create a race of men superior to the majority of the present race, his "super men" On great leaders great individuals (he says) mankind will always have to depend for its ideal, and these great persons will change mankind from a moral to a wise mankind His super man was to be noble, courteous resolute, above trivial vanities, self-disciplined courageous and a "fighter against his time Nietzsche believed in the coming of the "higher man,' and that he would come in the German race The educational essays were followed by *Thoughts Out of Season* (1873–1876) including *The Use and Abuse of History* and *Schopenhauer as Educator* Owing to failing health, Nietzsche resigned his professorship in 1879 and travelled He wrote *Human All too human* a moral and religious treatise in 1879 *Thus Spake Zarathustra* on the super-man in 1881–1884 *Beyond Good and Evil* on the future philosophy, in 1885 and *The Will to Power* in 1886

NIGHT TERRORS. — (See INSANITY IN CHILDREN)

NINETEENTH CENTURY, GENERAL SURVEY OF EDUCATION IN —(See EDUCATION SINCE 1800, GENERAL SURVEY OF)

NOBLES AND GENTRY, EDUCATION OF.— This was closely allied with the educational activi ties of chivalry (*q v*) and with the *Schola domestica* (*q v*) In Henry II s reign in connection with Becket Fitzstephen says "The nobles of the realm of England and of neighbouring kingdoms used to send their sons to serve the Chancellor (*i e* Becket), whom he trained with honourable bringing-up and learning" In fact, the education of the young nobility was one based largely on the relation of guardian and ward the principle being combined of domestic education elsewhere than in the child's own family It was an educational principle with the nobility at least from the days of Pliny that it was well for the child to learn from association with his elders rather than to segregate children into schools It was a disputed question from the time of Quintilian till the time of the Renaissance (and after) whether public or private education was the better, and, on the whole till after the reign of Queen Elizabeth the nobles distinctly preferred private education Ben Jonson in the *New Inn*, as late as 1629 makes one of the characters describe the education of youth in the houses of the nobility as—

> "the noblest way
> Of breeding up our youth, in letters, arms,
> Fair mien, discourses, civil exercise,
> And all the blazon of a gentleman
> Where can he learn to vault, to ride to fence,
> To move his body gracefuller, to speak
> His language purer or to tune his mind
> Or manners, more to the harmony of nature,
> Than in these nurseries of nobility?"

Philip Massinger (1583–1640) is supposed to have been brought up as a page to the Countess of

Pembroke at Wilton, and often alludes to the duties of pages

The Royal Household Noble youths were received for training, in mediaeval times in the Royal Household itself when the youths of the establishment were known as the King s Henxmen (See CHIVALRY AND EDUCATION) Henxmen had a master a deputy called the yeoman and a schoolmaster In 1550 William Berkley M A received for these duties £40 per annum a much larger sum than the salary of a grammar schoolmaster and in 1551, Clement Adams was appointed schoolmaster to the King s Henchmen ' for life at the same salary The institution of henxmen was discontinued by Queen Elizabeth in 1565 Another institution of great importance to bear in mind in mediaeval usage was the training of the heirs of rich nobles under age in the wardship of the Crown This became a source of considerable profit Thus Mr Cornish says (*Chivalry* p 59) " Henry VI was put under the care of Richard Beauchamp Earl of Warwick and the heirs of baronies in the Crown s wardship were brought up with him so that his Court became an academy for the young nobility So, too the practice had prevailed of the daughters of noble families being received into the castles of noble ladies, and into the Queen s Court The education of the ladies of the Court of Queen Elizabeth was praised as of that of a university (See WOMEN AND GIRLS EDUCATION OF)

Transition to University Education Before the Reformation there was a considerable number of monks and friars amongst the university students But this *clientèle* ceased and eventually the sons of the nobles and gentry formed a balance of gain to this loss Mr J A Venn suggests that this was due to " the more peaceful character of the times which enabled the sons of the country magnates to think of some other career than that of preparing themselves for war " (*Descriptive Text of Statistic Chart to illustrate Entries at Cambridge College* 1544–1907 p 16) The ideal education of the young noble was held to be that of an active career entirely opposed to that of the ' poor scholar at the universities which often preserved the old scholasticism of the Middle Ages The contrast of the two types is seen in the discussion in Cervantes as to the precedence of ' arms and letters (*i e* of soldiership and scholarship) a discussion common to all Europe The rapid rise of the new nobility of Tudor times and the fact that they came from the active progressive people of the community especially the commercial and travelling classes brought a width of outlook into the studies of their children such as the universities could not provide

The ideals of a noble s education in England can be studied in such books as Sir Thomas Elyot s *Gouvernour*, 1531 the *Institution of a Gentleman* 1555, Laurence Humphrey s *Nobles* 1560 (a specially Puritanic and what may be called Genevan exile point of view) John Cleland's *προ παιδεια or the Institution of a Young Nobleman* 1607 and Henry Peacham's *Compleat Gentleman* 1622

The union of the best of the old chivalric views of education with those of the Renaissance is seen to most advantage in the Italian Count Baldassare Castiglionie's *Cortegiano*, originally published in 1528 at Venice and translated into English by Sir Thomas Hoby as *The Courtier* in 1561 The courtier is to be trained to act with easy grace rather than with the scholar's apparent strain He is to be " well seen " in discourse upon states, and to use the manners and language of each country in which he travels He is to be skilled in reasoning He must at least speak Italian French and Spanish He is to be good company and not to play dice and cards for money Nor is he to be without the best classical accomplishments of the best men at the university He must be able to dance, sing and play the lute and viol He must be skilful in martial feats on horseback and on foot He must bear himself nobly and magnanimously and always follow virtue and flee from vice It is on active exercises and absorption in good manners and morals that the stress is laid The Renaissance scholar, Roger Ascham enthusiastically praises Castiglione s book as " joining learning with comely (physical) exercises ' The ideal education of gentlewomen is described by Castiglione as parallel to that of the courtiers

The Inns of Court and Grammar Schools Institutionally the Inns of Court (*q v*) were the training places of the nobility rather than the university in the fifteenth sixteenth and early part of the seventeenth century John Selden in 1616 says that there were four chief Inns of Court and in the least frequented of these there were about 200 students sons to persons of quality those of an inferior rank not being able to bear the expenses of maintaining and educating their children in this way The training was not merely legal There was an academy connected with the Inns of Court in which singing music and dancing were taught On festival days there was study of sacred and profane history after the offices of the Church were over Selden says that knights barons and the greatest nobility often placed their sons in the Inns of Court not so much for study of law but to form their manners and morals Nor were there lacking suggestions of further institutions *ad hoc* for training the young noble

Sir Humphrey Gilbert (*c* 1570) suggested the QUEEN ELIZABETH'S ACADEMY ' for the Queen s wards and other youth of nobility and gentlemen ' The suggested staff included teachers of Latin and Greek and Hebrew logic and rhetoric moral philosophy and natural philosophy a reader in physic in civil and one in common laws a teacher of French and one of Italian one of Spanish one of high Dutch a master of defence of dancing and vaulting of music a herald of arms and a teacher of the great horse Again differing from the university the instruction was to be in English not in Latin Gilbert s scheme fell through and in 1620 Edmund Boulton brought forward another scheme for the King's wards to teach them in England " instead of going abroad "

In 1635 Sir Francis Kynaston planned an academy under the name of *Musaeum Minervae* In 1648 followed Sir Balthasar Gerbier s scheme and in 1700 that of Lewis Maidwell All these schemes for nobles academies suggested wider training for the activities of life than the universities proposed It was only in the eighteenth century that the young noblemen became numerous as gentlemen or fellow-commoners in the universities, and then the proportion became greater than it was in the nineteenth century, and apparently, by their ill conduct and even " illegalities " contributed largely to the degeneration of the universities in that century

In the eighteenth century, the head master Thomas Thackeray, made Harrow an aristocratic

non-local school, and the founder s (John Lyon) concern for "poor" boys was secured by a local middle-class school for the town Similarly, Thomas James (between 1778 and 1794) raised the number of boys from 52 to 245 at Rugby and was the precursor of Thomas Arnold in converting that school to a great non local school Thus the great so-called "public' schools differentiated themselves from the other grammar schools to which type they belonged, by attracting in the nineteenth century larger numbers of boarders from the nobility and gentleman classes for the most part, and a resuscitation in a measure of the old chivalric educational ideals partially on the side of physical exercises in school games and athletics though retaining an allegiance to classical studies—constantly in recent years opening out the curriculum towards the older aristocratic ideals of the width of outlook F W

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NOMINALISM —This is the name given to a school of thought during the early Middle Ages (see SCHOLASTICISM) which seemed to imply that the classification of objects is arbitrary Unfortunately we know the Nominalists chiefly from their opponents who continually assert that Nominalism denies the existence of universals and treats all class names as mere empty sounds From the scanty evidence we may judge that the Nominalists (1) were in revolt against the crude metaphysics of Scotus Erigena and the first scholastics and (2) were mainly impressed with the irreducible reality of the individual The problem is this When we say A is a man B is a man etc to what reality do we refer by the word man? There was a school which taught that man was a superior kind of reality of which A B etc were deficient or at least subordinate varieties But Aristotle had said that "things cannot appear as predicates (*e g* it makes no sense to say red is this book unless we mean this book is red) The words man etc are used as predicates therefore they cannot be things (*res*) We notice that "man etc all refer indifferently to a great number of individual objects we may call them therefore universals It seems then that we are driven to say that universals are not things The mediaeval word *res*, unfortunately makes the understanding of Nominalism difficult for us now since it does not quite mean thing and it does not quite mean "reality' The tendency in the Middle Ages however was to treat every reality as a thing As far as we can now discover the Nominalists never meant that one might classify the objects of thought as one liked One could not, at will treat a tree as a man The universal, therefore, was not a mere sound But if one said that Socrates was a thing and this tree was a thing then certainly, "man' and "tree" were not *things* for Socrates was something fundamentally distinct from such generalities as "man" But it is easy to see how one could make Nominalism absurd by supposing that it implied that "man" and "tree" were not *realities* This was the supposition of those who said that the Nominalists believed in three Gods when they said that the persons of the Trinity were *res* and God was a universal And because they had not thought out their meaning the Nominalists failed in their effort to turn the mind away from class names to the study by sense perception of individual objects

C D B

NON-COLLEGIATE CERTIFICATED TEACHERS, THE NATIONAL ASSOCIATION OF —The Association dates from the autumn of 1899, when a meeting was held at Essex Hall London The late Mr Richard Waddington J P of Bolton (1898, N U T President) was to have been chairman but he was taken ill and Mr Marshall Jackman (1900 and 1910 N U T President) presided instead The meeting was organized with the object of banding together those certificated teachers who had gained their professional diploma without residence in a State-aided institution

Until quite recently college accommodation was totally inadequate to supply the number of qualified teachers required, and a most acute difficulty was felt by those who were unable to conform to a creed test or whose convictions would not allow them to accept the religious teaching or take part in the religious services of the denominational colleges

Colleges for Nonconformists were few, many candidates who stood high on the Entrance Examination (Scholarship) List were precluded from residential training—and this through no fault of their own Whether the candidate went to college or not he had to prepare according to one syllabus (laid down by the Government), pass the same examinations, and obtain the same qualifying diploma—the 'Certificate" yet a "barrier" was set up between the collegiate and the non-collegiate to the detriment of the latter, by the action of the Board of Education in specifying that collegiates were responsible for the instruction of seventy children, while non collegiates could only be recognized for sixty

This naturally set up differentiation in scales of salaries and although the distinction made in the Code between those who had reached the same goal by different roads was eventually recognized as unjust and was abolished both classes being trained certificated teachers,' the one "internal" and the other "external' —yet the removal of the distinction did not mean the removal of differentiation in salary scales, and it was a deep feeling against this injustice that brought the Association into existence

Objects The objects of the Association are—

(*a*) To safeguard the interests of non-collegiate certificated teachers, to eliminate all distinction between certificated teachers—*i e* the recognition of the Government diploma to cover all points—and to endeavour to remove disabilities existing in the Code, and in the Regulations of the Registration Council and Education Authorities

(*b*) To secure adequate college accommodation

Until this is obtained the recognition of the certificate as a complete qualifying diploma, and therefore equal recognition for both classes of certificated teachers—"Trained Non collegiates" and "Trained Collegiates"

(*c*) To secure that no penalties be placed upon the existing non-collegiate certificated teacher when the college output is deemed sufficient to meet the demand of certificated teachers

(*d*) To broaden the scope and raise the standard of the Certificate Examination

(*e*) To secure equal pay and equal chances of promotion to all holding the professional diploma

Achievements The actions taken by the Association are shaped to suit the form of injustice which it has to combat

When the Act of 1902 caused the formation of new scales of salaries whereby the non collegiates all over the country were penalized a joint memorandum was issued by the N U T the N F C T and this Association, making clear the injustice of differentiation, and urging the same scale for all certificated teachers

In the 1906 Code there appeared a foot note to Art 10 stating that the Board might require (after a certain date) that a certain proportion of the school staff should have been through a college course Prompt action on the part of the Association was taken and with the hearty co operation of the N U T withdrawal of this obnoxious footnote was obtained

But a further and even grosser injustice was thrust upon non collegiate teachers in Clause 9 of Circular 709 This unwarrantable aspersion on the merits of half of the certificated teachers of England and Wales in an otherwise welcome document which moreover was thoroughly irrelevant to the general subject matter of the Circular could not go unchallenged A condemnatory resolution was drawn up and sent to every Local Association throughout the country the support of many Members of Parliament was obtained and the matter was brought before the House of Commons with the result that the penalizing factor was with drawn with respect to non collegiates certificated before August 1910

The Association recognizes the benefits which should come from a properly regulated college course and now that adequate college accommodation is available would make such a course obligatory upon all future teachers before obtaining the certificate It therefore agrees that the "Acting Teachers' Examination" should be abolished (after due notice) but claims that at the time of the abolition, the interests of all existing certificated teachers should be fully safeguarded

The Association has very closely watched the position of the non collegiate certificated teacher with regard to registration (*q v*) and is of opinion that the Teachers' Registration Council does and will, see that non collegiates receive equitable treatment The policies of both Council and Association agree in the matter of the abolition of the Acting Teachers' Examination and the desirability of a proper college course for all future teachers, and it, therefore has been decided to urge members to come on the Register not only as a professional duty but as a means of breaking down the unjust "barrier" which should never have existed

Representing over 40,000 certificated teachers, and having branches all over England and Wales, the Association is continually sending deputations to areas where non-collegiates are unfairly treated press campaigns are organized, and correspondence is conducted between the General Secretary and those concerned

The *Annual Handbook*, the numerous pamphlets, leaflets circular letters, etc, greatly facilitate the work of enlightening those who (in many instances merely through lack of real knowledge) believe in the mythical distinction between collegiate and non collegiate certificated teachers

The work of the Association is carried on by a President a Vice President two ex Presidents a General Secretary a Treasurer and a Council of thirty six annually elected members

Amongst those who have occupied the Presidential chair may be mentioned the late R Waddington J P (Bolton) W H Pearsall F C S (Dalton in Furness) A E Cook F E I S (N W London) the late J Scotson M Sc (Manchester), T Cartwright B A B Sc (Anerley) Miss A L Broome (Ipswich) A Blenkinsop F E I S (Leeds) J Despicht (London) W H Hughes J P (Eccles), G W Steward (Walthamstow) F Taylor J P (Stourbridge) J Langton F R G S (Hackney) and Miss A K Williams (W Lambeth)

The General Secretary is Councillor J Langton F R G S 2 Comberton Road Upper Clapton E 5

J LANGTON

NONCONFORMIST EDUCATION OF THE MIDDLE AND WORKING CLASSES—Nonconformists took an important part in national education from 1640 though checked by the reaction (1665–1700) till after a period of legislative indecision (1809–1832) the State came decisively to the front in 1870 The work done in Charity schools of which the pioneer was the Nonconformist school in Southwark is dealt with separately so is that of university rank in the academies of the eighteenth century The survey taken here is of private and public schools for day-boys and boarders

Calvinists had in every land shown themselves good supporters of education Cambridge profited by Emmanuel and Sidney Sussex Colleges, and its *alumni* founded a new Cambridge in Massachusetts One of her graduates Hanserd Knollys who had been master at Gainsborough then had tried New England returned and opened a private school in 1641 on Tower Hill afterwards housed in a large building on the Artillery Ground He wrote new grammars of Hebrew Greek and Latin which he dedicated to his many pupils who became apprentices in the City Milton's little *Tractate of Education* (*q v* MILTON, JOHN) also advises Latin books and pays a generous compliment to boys in assuming that all had his own omnivorous hunger for information and could digest it without direction Yet much is due to the man who defines education as that which fits a man to perform justly skilfully and magnanimously all the offices both private and public, of peace and war

It was war just then that brought new men to the front, and university men like Vane, Hutchinson, Ludlow proved no better equipped for life than Monk Harrison Fleetwood Hence when the wars were over, questions of curriculum and method began to receive serious attention Owen's reign at Oxford showed that, while he could restore order and teaching, he had no sympathy with the new ideals Milton had to give up his little school for the council chamber, but other reformers

proposed to enlist those who like Brancker, were investigating the natural sciences, combining the forces of Gresham College and the Inns of Court, to provide a new type of education The scheme however, was not pushed the Royal Society of the next reign was by no means Nonconformist, fifty years passed before Eames was admitted though Ward soon followed

Experiments in Wales and the North Two neglected parts of the Commonwealth were chosen for experiment—Wales and the North—and special commissions were appointed A university was planned for Durham but did not then come to fruition In Wales Harrison and Powell were leading spirits, they tried to provide efficient masters, but as the funds came largely out of tithe the scheme was wrecked at the Restoration In each case, Nonconformist voluntary effort supplied what the State destroyed

The North was indebted largely to the Friends who at a general meeting in Skipton enjoined all parents to educate their children so that there may not be a beggar amongst us ordering each local meeting to see to the expense A school was opened at Newby Stones by Thomas Lawson who became known as the best botanist in the realm after his death in 1691 another arose at Kendal which flourishes to day Other early schools due to the Northern Friends are Wigton Ayton Rawdon Halsall Penketh Great Budworth But the extreme corporate feeling of the Society limited these in practice to the children of Friends and while giving them a high level hardly benefited others The complementary work done in the Academies of Frankland Dixon and Rotherham is dealt with elsewhere

In Wales another lead was given by Thomas Gouge who in 1674 founded schools which at last were in 300 towns He made however the old mistake of teaching in a foreign tongue English so that when after his death the vicar of Llandowror came to the front Gouge s schools seem to have passed over to the vernacular system and to the control of the Established Church Only here and there do we hear of Welsh Nonconformist schools before the Revival apart from those established by Daniel Williams and the suggestive experiments on Sundays at Neath and Tyrdwncyn

Details can be supplied showing that other previously neglected districts like Yorkshire Lancashire and Cornwall were well attended to while the large towns were equally catered for At Taunton Matthew Warren laid the foundation of what on his death became the first public academy In Bristol Edward Terrill had a good 'writing school and the Friends fostered another whose first three masters were exceptionally able, while at Sidcot a private Friend established a school The Society being splendidly organized and very tenacious extended its operations systematically in Pennsylvania the earliest laws bade each parent have his children able to read and write by the age of 12 and teachers were brought from Edmonton and Bristol to organize

The Eighteenth Century Persecution hindered noteworthy results till 1700 but a few men propounded or practised striking ideas Marchamont Needham wrote on schools and masters but was so versatile that he conformed and proposed the suppression of schismatic masters Charles Morton had the courage to drop Latin as the medium of all instruction, but he was driven out and went to mould Harvard One of his pupils Daniel Defoe, not only mastered Latin, Greek, French, Italian and Spanish, astronomy, geography, and history, but wrote on education, his *Essay on Projects* has hints on officers' training schools seminaries for girls, academies for boys He wrote on Royal Education though the pamphlet only got to press in 1905, he defended the academies against the onslaught of a fellow pupil Samuel Wesley, he was the most conspicuous of the men, like Haines and Tryon dealing with industrial schools Other prominent writers were Langston editor of the classics and Oldfield on method

The Friends have had the honour of resisting repeated legal attacks and obtaining judicial decisions which freed all but grammar schools from episcopal control Their yearly meeting constantly urged the importance of providing good teachers and in Ireland they opened admirable boarding schools as at Mountmellick and Ballytore where Shackleton had the training of Burke So many skilled masters did they possess that a conference was held in 1705 which instituted many reforms of method and changed many school books

More writers now appeared If Thomas Hill taught his pupils to sing Buchanan s paraphrase of the Psalms into Hebrew and Greek and if John Jennings was equally old fashioned with his logic yet geographies and grammars came from Addington and Harrison mathematics and science from Addington Crosby Ashworth and David Jennings Watts dealt with both sides co operating with Eames in his geography and astronomy Schools of all kinds were opened and it was the rule rather than the exception for a Nonconformist minister to take pupils thus Samuel Medley educated by his grandfather Tonge at Enfield had successive schools at Seven Dials (Soho) Watford Bristol had such men as William Foot Anthony Purver Prior Estlin, John Evans

As the eighteenth century wore on and the quality of education deteriorated a few men set themselves to widen its area and maintain its level J C Ryland of Warwick Northampton Enfield, who wrote on science helped Sutcliff of Olney to impress the value of culture on the Midland Baptists while Fawcett of Halifax and Medley at this time at Liverpool did the same service in the North Cornish wrote on the importance of classical learning and kept a high class school at Colyton for nearly forty years the same service was rendered by Cogan who took up Ryland's work at Enfield, and the value of his school may be seen in that he educated Disraeli Milner Gibson, Russell Gurney

These were commercial enterprises but Nonconformists were equally alive to national problems The Charity School method had spent its force, the population was increasing with the rise of power mills and the next device was to open elementary schools conducted still by paid teachers, on the only free days—Saturday and Sunday While the Western leader was Raikes an Episcopalian the London leader was William Fox a Baptist they combined to establish in 1785, the Sunday School Society Wales presented different problems and Thomas Charles met them by training teachers who were stationed for six months to teach freely then were moved on the expense being borne by the Calvinistic Methodists These circulating day schools were presently supplemented by Sunday schools, but opposition developed in Wales to teaching reading, writing,

arithmetic on Sundays so that the curriculum concentrated on the Bible teachers were recruited from amateurs and the Sunday schools ceased to contribute to general education

The Nineteenth Century With the nineteenth century it became evident that new steps were necessary the influence of Pestalozzi the French constitution of 1791 enunciating that all children must be educated freely and the reforms of Humboldt in Prussia compelled advance while Priestley indicated some profitable lines Joseph Lancaster a Friend offered education to all comers and to cope with the large numbers who came devised a system of monitors to deal with the diversity of denominations he planned a course of religious instruction which should emphasize agreements and ignore differences The British and Foreign School Society was soon established to promote his ideals An attempt was made in Parliament to enjoin an elementary school in each parish but it was wrecked on the question of control and the issue emerged which still divides parties Elementary schools were then founded in connection with several Nonconformist churches

Meantime the "Hills attracted great attention first by a pamphlet on plans for the Government and education of boys in large numbers then by their school at Birmingham—afterwards at Totten ham The principle was to put the discipline into the hands of the boys their success led to Arnold at Rugby transforming many ' public schools ' and the principle is being applied anew in the boy republics of Kansas

With 1839 the State did enter the field and for a generation Nonconformists discussed whether they should remain independent or co operate Miall and Hinton championed the voluntary plan Binney the State partnership Except for the Wesleyans Nonconformists practically gave up the attempt to provide elementary schools on a national scale A new policy of purely secular education found favour in Lancashire and Birmingham but it found few supporters in Nonconformist circles Attention was directed to untilled fields Mary Carpenter promoted ragged reformatory and industrial schools After 1870 Nonconformists retired from new work except for philanthropic institutions such as Barnardo s and Spurgeon s

All the more was attention given to a higher grade In Wales especially the revival of Welsh led to a scheme by the Cambrian Society and the plans of Sir Hugh Owen took shape in the scheme of intermediate education John Brown Paton a staunch opponent of secularism stopped many gaps especially for boys of 13–17 he has to his credit the Boys Life Brigade the Home Reading Union the University Extension Movement Martin Ready of Peckham who educated Browning reminds us of the many private schools which are not tabulated or reported upon but which do so much for the middle classes

The corporate spirit revived the Friends leading the way with Ackworth in 1758 Sidcot was founded in 1809, Wigton followed in six years and the Society s Board now represents thirteen such schools The old orthodox Dissenters established a grammar school at Mill Hill boarding schools for the children of missionaries arose Wesleyans built at Woodhouse Grove Within a century have grown up many such Nonconformist public schools Bishop's Stortford, Bury St Edmunds Cambridge Canterbury Colwyn Bay, Folkestone Gravesend Harrogate Jersey, Plymouth, Saltburn, Shebbear Taunton Tettenhall Truro, and training colleges at Borough Road (Westminster) Southlands Cambridge have been largely instrumental in training teachers from Nonconformist homes who desire to take part in the education of the country

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NONCONFORMIST GRIEVANCES IN STATE EDUCATION —The following injustices are frequently described as Nonconformist They are actually civic being violations of the fundamental rights of citizenship but they have been labelled "Nonconformist ' because members of the Free Churches have taken a prominent part in exposing them and in seeking their abolition Nonconformists ask nothing for themselves They appeal to the Government for what is just to the rate and-taxpayers fair and equal to the teaching profession and effective in the building of citizens useful to the commonwealth

The Capital Injustice from which the evils of the present system proceed is that whilst the educational system originates in Parliament and is national in range yet its policy and spirit administration and ideals are largely ecclesiastical and sectarian The Education Act of 1902 was confessedly passed to enable the Anglican Church [and the Roman Church] to take their right position in Elementary Education" The schools it was said "are not an end in themselves they were called into existence to give Church teaching to Church children and Lord Hugh Cecil declared that "the State school should be a door leading to the Church '

On the other hand the civic position is based on the exclusion of churches as churches and priests and ministers as priests and ministers from the schools of the State Those schools exist for the making of citizens and not of Churchmen In them there should not be any "foothold for sectarian privilege The sectarian policy wrongs the State by compelling it to favour one Church and persecute another defrauds the people of control whilst forcing them to provide the funds subjects teachers to ecclesiastical tests and blocks the way of the children to that free and full development of character on which the future well being of the Commonwealth depends

Single-school Areas On all hands the gravity of the grievance in the rural districts is confessed Anglicans and Roman Catholics admit that it is an injustice to compel parents to send their children to a school where the Free Church is despised if not attacked, and those who attend it are discredited if not boycotted and the whole religious atmosphere is death to the convictions of the parents Parents should not be left without option,

nor should children be subjected to the humiliation of removal from school by "the conscience clause," when their parents are paying rates and taxes just the same as the parents of the children who remain It is the duty of Parliament to give every parent an opportunity to send his child to a Council school and to a "free place" in such a school

Non-democratic Control The denominational schools are maintained at the public expense, and yet are under what is in effect private management The control of the clergy is intact and was meant to be kept intact A bishop said 'To take away the control of the clergy would subvert one of the first principles of education in this country" The 'invigilator is a delusion and a snare Co optation is worked in the interests of sectarianism The abolition of the School Boards freely elected by the people has destroyed at once the interest of the people in education and the power of the people over educational administration The primary right of the people to govern themselves is violated Dr Dale said of such legislation as that of 1902 "It empowers one religious denomination to levy a rate for teaching its creed and maintaining its worship' By that Act the Anglican Church was endowed with an additional yearly sum of a million pounds and the Roman Catholic Church became in a real sense a State establishment and a recipient of State funds for its most important work Dr Fairbairn declared "The formula is—the Anglican and Roman Catholic Churches to rule in Education and the citizens to pay Sectarian interests take precedence of public and the children the country and the State all suffer

Ecclesiastical Tests for Teachers The education authorities are not free to select the most capable teacher but may be compelled to reject the best and to accept the second best or the worst on the irrelevant grounds of religious beliefs or of ecclesiastical associations The Rev Stewart Headlam speaking of State teachers says "If they became members of the Church of England they would find it much easier to gain positions as teachers As a matter of fact the Church of England could give its members posts in non provided schools under the London County Council and as a member of that Church he was horrified at the thought of the gigantic bribe offered to a young person to become a member of that Church in order to get a situation The President of the National Union of Teachers affirms 'No one could justify the closing of more than 12 000 head teacherships to all but those who could satisfy a credal test or the appointment and dismissal of public servants by private persons or the subordination of a profession and of the educational interests of 3 000 000 children to the interests of sectarianism"

Condemned School Buildings A further grievance is the continued retention of schools long since condemned as inimical to the health of the children and ill adapted for all round and efficient educational work Their removal was promised in 1904 but the sectarian purpose they serve blocks the way In 1914, there were, in London over 54 000 children in non-provided schools where the playground is non existent lighting is bad the ventilation worse and the sanitation worst of all Not only Nonconformists protest against this, but the Trades Unions are "taking action to secure the rebuilding of insanitary, out-of-date schools" This sacrifice of the health and vigour of our future citizens to the domination of sectarian interests ought to cease, and specially in face of the fact that according to Mr Runciman, there are at the lowest estimate 60,000 children in our elementary schools suffering from consumption

Training Colleges "The Training College question' says *The Times* "is necessarily bound up with the elementary school question It is in the Training Colleges that the key to the position will be found" That key is not in the hands of the people but of ecclesiastics, although over 90 per cent of the cost is furnished by the public A just State would take over the whole expenditure of training its teachers and keep within its own hands the entire administration and control

The State is the chief agency through which, by means of its legislative and administrative powers, civic disadvantages should be readjusted, equality of opportunity attained efficiency and unity amongst citizens of all classes promoted and justice made to surround us as a common air Educational legislation and administration in this country frustrates the realization of these just ideals owing to their subserviency to sectarian ends

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NORMAN-FRENCH—(See ANGLO NORMAN IN ENGLAND THE USE OF)

NORTH LONDON COLLEGIATE SCHOOL FOR GIRLS—The North London Collegiate School for Ladies was opened in Camden Street, in 1859, by Frances Mary Buss then 23 years old She held the diploma of Queen's College and was an experienced teacher With her were associated, as founders her father, R W Buss, the artist, her mother who had been trained at the Home and Colonial Institute and the Rev David Laing, who, as Hon Superintendent, stood by the young head mistress until his death in 1860 Her brothers, Alfred and Septimus gave much help in the school

In two years the numbers had risen to 200 This very success led to a difficulty in finding suitable teachers At Miss Buss's request the Home and Colonial Institute started classes for the training of secondary teachers, which were long recruited from the North London When, in 1863 Cambridge University allowed girls to try the examination papers set for boys Miss Buss's contingent of candidates was the largest—twenty-five, fifteen of whom were successful Two years later the Local Examinations were thrown open to girls, and the pupils entered for these in large numbers until, in 1904 they were replaced by the School Leaving

Examination of the University of London In 1864 the school was inspected on behalf of the Schools Inquiry Commission and, as a result, Miss Buss was invited to give evidence before the Commissioners She convinced them that it was not necessary for the heads of girls' schools to be men, and at her suggestion, the title of Head Mistress was adopted

It was now that Miss Buss first thought of securing the continuity of her school by making it a public one In 1870 a trust was formed The first substantial endowment was given by the Brewers Company in 1872 the Clothworkers added to it in 1874 and 1876 and the foundation scheme received the Royal Assent in 1875 In 1870 the school had been moved to Camden Road under the name of the North London Collegiate School for Girls a lower school called the Camden School being started in the old buildings In 1879 the new buildings in Sandall Road were opened by the then Prince and Princess of Wales, the latter having been President since 1871 an office she still retains

All anxiety as to the future was now over and the School took its place in the forefront of the education of English girls becoming the model for other schools notably those of the Girls Public Day School Trust When the examinations of the University of London were thrown open to women, the School immediately took advantage of them Its Sixth Form has for many years consisted of undergraduates reading either for the Intermediates or for scholarships at various women s colleges

Miss Buss was a true pioneer Her institution of physical training which dates back to quite early years is an instance A fine gymnasium formed part of the new buildings in Sandall Road and here classes were held for those pupils for whom the Medical Inspector had prescribed remedial exercises It was in the 80 s that the practice of medical inspection was instituted by Miss Buss and a memorandum on the subject drawn from her experience at the School was presented by Miss Cock, M D as part of her evidence to the Royal Commission on Secondary Education in 1894 Miss Buss also led the way by requiring professional training for her mistresses and both the Maria Grey and the Cambridge Training Colleges owed much to her support and sympathy

It was in 1875 that Mrs Bryant joined the staff as Mathematical Mistress As the years passed on she became the Head Mistress s right hand and in 1895 soon after Miss Buss's death was appointed to succeed her Thus was established continuity of tradition with unbroken development up to the present time

Mrs Bryant was the first woman D Sc and has always taken a prominent part in educational politics She and Lady Frederick Cavendish were the first women to sit on a Royal Commission that on Secondary Education She is a member of the Consultative Committee and was formerly a member of the Senate of the University of London and of the Education Committee of the London County Council All this has naturally had a beneficial effect on the educational outlook of the School

In 1900 the Frances Mary Buss Schools celebrated their Jubilee a Thanksgiving Service being held in St Paul's Cathedral

Among the changes which have marked the present century may be specially noted the receipt of grants from the Board of Education and the reservation of free places for scholars the addition of improved laboratories and class-rooms, etc, largely due to l beral grants from the London County Council and the purchase of a playing field close to the School, greatly to the benefit of its social life

In 1918 Mrs Bryant retired, and was succeeded by Miss Isabella M Drummond who had previously been science mistress on the staff and then head mistress of the Camden School—the second school on the Frances Mary Buss Foundation Miss Drummond was educated at Oxford University where she took a first class in the Final Honour School of Natural Science She devoted her fifth year to research and then after a year s training gained the Oxford Teacher s Diploma with distinction

From 1912–1914 Miss Drummond was President of the Association of Assistant Mistresses and served on the Federal Council of Secondary Schools Associations In 1915 she was President of the Association of Science Teachers and is now a member of the Executive Committee of the Head Mistresses Association (See also Buss Frances Mary) E M H

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NORWAY, EDUCATION IN —In 1739 a law was passed that the children of the peasantry should receive regular instruction in religion reading writing and arithmetic But it was not until Norway on its separation from Denmark in 1814 received a free constitution that any real activity was shown in establishing an ordered system of national education The law for the country school was passed in 1827 The population was so scattered that large use had to be made of the ambulatory school (*omgangsskolen*) which flitted about from one farmhouse to another until the whole neighbourhood had been visited in the year But it is only in out of the way parts of the country that such schools are to be seen at the present day The law for town schools in 1848 only gave legal sanction to arrangements already existing The new law for country schools in 1860 marked a great advance Finally in 1889 a law was passed for both town school and country school which in its essential features continues to the present day In accordance with this the time of school attendance extends in the country from twelve to fifteen weeks a year, but in towns to forty weeks with attendance every day School attendance is obligatory from the seventh to the fourteenth year

In earlier times schools were under the control of the Church But in 1889 the law transferred this to the communes which elect *skolestyrer* (school boards) for that purpose The supreme control lies with the Church and School Department, which

acts through the seven school directors (one for each diocese) Teachers are paid by contributions from State and commune Salaries, which formerly were low especially in the country have lately been greatly increased Teachers occupy a high position in the public regard and have played a great part in political life

The subjects taught in the *folkeskole* are religion the mother-tongue, history, geography Nature subjects, writing arithmetic drawing singing Sloyd gymnastics and domestic economy The two last subjects, however are not found in all country schools Sometimes also one foreign language is taught Further instruction is given in continuation schools amt (*i e* county) schools and people s high schools the two last being for those who are reaching or have already reached full age

Training colleges have a three-years' course but a fourth year is in contemplation Six of them are public five private The latter train as many teachers as the former at one tenth of the cost to the public purse Much has been done in later years to give the schools handsome buildings and worthy equipment

Secondary Education The secondary school in Norway usually consists of a four years *middelskole* with a common time table for all pupils followed by a three years *gymnasium* in which the student must work on one of three lines according as mathematics and science or language and history (with or without Latin) form his leading subjects As in sister countries its character is determined by the requirements of the two State leaving examinations *i e* (1) the *examen artium* which at the age of 18 or 19 admits to the university, and (2) the *middelskole* examination three years earlier which serves the double purpose of a passport to the *gymnasium* for those with a longer school course and of a leaving examination for those who go to business at or about sixteen These two examinations underwent a very thorough re organization in the new school law of 1896

This new law established (*a*) an organic connection between the elementary school and the secondary school (*b*) made the State secondary school into a co educational school (*c*) relegated Greek to the university and (*d*) made Sloyd obligatory throughout the *middelskole* Norway is a democratic country little fettered by tradition or vested interests and this amount of radical change introduced at one time makes the character of its educational evolution well worthy of close observation in other lands

These examinations are the outcome of wide experience, and are less cramping and more educational than many examinations are apt to be This is due to the importance attached to the *viva voce* tests to the fact that the teachers themselves are jointly responsible with the Government-appointed censors for the results to the absence of set books to the large options provided, and to the stress laid upon those parts of the examinations that show training and culture Moreover as one or other of them is necessary for entering upon the various forms of State employment and many of the professions, they render unnecessary all the work that with us is performed by the Civil Service Commission

Organization The schools themselves have a threefold origin The *State Schools*—all of them complete, comprising *gymnasium* and *middelskole* in one building—are fifteen in number, duly distributed over the country Next come eighty-one schools for which the commune or local authority is responsible but in seventy-two of these the State pays one-third of the initial salary with all subsequent additions on condition of appointing the staff These schools are for the most part *middelskoler* only though fifteen have added a *gymnasium* or some part of it

The rest are State-recognized private schools In 1918 these were twenty-six in number, to be found for the most part in the capital and one or two of the larger towns seven being *gymnasia* and *middelskoler* and nineteen *middelskoler* only It is the liberal inclusion of these schools last named in the same ranks as the State schools that differentiates education in Norway and the North of Europe from education in Germany, in Great Britain, and the United States, and has in many ways resulted in great educational gains Their freedom is a relative freedom only, for in all essentials they work on the same lines as the State and communal schools but that relative freedom has been great enough to enable them to initiate new methods and take new departures It was in such schools that schoolmen like Hartvig Nissen in one generation and Aars and Voss in the next developed their powers and set the pace for all other schools in the land It was in the same schools that one half of secondary school pupils were taught twenty years ago—a great achievement considering the increasing unwillingness in Norway (but not in the sister countries) to make any money contribution to them But in 1918 soaring prices made it impossible to pay a sufficient salary and the communes bought so many of them that there now remain only three private *gymnasia* and eleven *middelskoler* Non recognized schools, about 100 in number with 4 000 pupils must by law send in yearly statistics giving the number of classes pupils and teachers

With regard to the organic connection between *folkeskole* and higher schools the usual rule has been that the pupil leaves the *folkeskole* at the end of the fifth year to spend four years in the *middelskole* But this is not the ideal aimed at in the law of 1896 Where the circumstances allow of it the *middelskole* may be of two years duration only In that case, the pupil instead of leaving the *folkeskole* at the end of the fifth year spends the sixth and the seventh years there also and the instruction given in those two years must then be arranged in such a way as to be equivalent in the judgment of the Education Department to the first two years in an ordinary *middelskole* This of course involves increased expense for the commune and completer courses for the teachers at the training colleges—changes that cannot be brought about everywhere This idea of the *enhetsskole*—the idea that the primary school and the secondary shall not be two schools but one—has impressed itself so firmly on the popular mind, that efforts in this direction are constantly made with varying success Nevertheless the opinion is often expressed that if too much be made of this ideal, the *folkeskole* may be twisted from its main object—that of preparing the bulk of the pupils for the active tasks of daily life For these, the continuation work of *Amtsskoler* and *Folkehöjskoler*, with their less bookish, non-examinational methods, would seem to furnish

a fitter preparation The two year *middelskole* so far has not prospered but there is an increasing number of *middelskoler* with a three years course following on the completed *folkeskole* and in 1920 the Storting enacted that State aid should be confined to this type of *middelskole*

Administration The oversight of the secondary school and the conduct of the leaving examinations are committed to the *Undervisningsraad* a board of seven experts appointed for five years at a time who also act as a consultative committee for the consideration of special questions remitted to them by the Education Department The chief secretary of this department (*expeditionschef*) is or has been a teacher (generally the *rektor* of a gymnasium) The training of secondary teachers consists of five years at the university terminating in the teacher's degree *Cand Mag* and followed by six months training in theory and practice under the Professor of Education and his assistants

The University of Christiania was founded in 1811 and now has seventy two professors A Technical High School at Trondhjem of university character commenced work in 1910 It has seven departments forty professors and 600 students J S I

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NORWICH TRAINING COLLEGE —The College began its work in a small way in the Cathedral Close in 1839 and was thus one of the earliest institutions of its kind In 1853 larger premises were taken in St George's Plain where the work went on until 1892 By the exertion of enthusiasts in Church education led by Canon Howell and supported by Bishop Pelham funds were collected for new buildings in Earlham Road on the western outskirts of the city and the present College was opened in 1892 At that date the co operation of the Diocese of Ely was secured and the governing body was thereafter formed of the bishops deans and archdeacons of the two dioceses with a number of elected gentlemen and ladies

The buildings are of modern style and provide accommodation for about eighty six resident students with a common room a science room and large lecture halls The Demonstration Schools for 300 girls and infants form a separate block The students have also the advantage of working in some of the Church and council schools of Norwich The College Chapel dedicated to St Etheldreda was built as a memorial to Canon Howell

A few day students are admitted The course of study is arranged to prepare students for the Teachers Certificate Examination and all the resident staff of mistresses are university women

NOSE, THE HYGIENE OF THE —The chief functions of the nose are concerned with smelling speaking and breathing It has a part in the act of swallowing which is interfered with when the nose is severely blocked It acts also as a ventilating shaft to the small tube which passes from the ear to the throat and obstruction of the nose is a powerful cause of deafness and of inflammation of the ears The sense of smell includes a great part of the sense of taste for the tongue only detects the fundamental flavours—salt sweet sour and bitter—all the savours being perceived by the nose and carried thither by the air which passes behind the palate The resonance of the voice is largely due to the nose and its accessory cavities when these are blocked, the voice is 'dead an increased strain is thrown on the vocal cords and the whole throat is likely to become inflamed

But the most important function of the nose is to protect the air passages from the deleterious effects of the air breathed This it does by ridding the air of dust and germs raising its temperature to that of the blood and fully saturating it with moisture For these purposes the healthy nose is a wonderfully efficient instrument The partition between the two nasal passages (*i e* the inner wall of each) should be smooth and straight but the outer wall is made irregular and its surface increased in extent by three horizontal curved shelves or scrolls called the turbinal bodies The cavities are lined by a soft skin kept moist by numerous glands secreting a viscid fluid the nasal mucus and freely supplied with blood for this purpose for nearly a quart of water may be required in twenty four hours to moisten the inspired air The cells lining the nasal passages are provided with tiny bristle like projections which rhythmically sweep in a downward and backward direction all the dust caught on the moistened lining The nasal cavities are much flattened from side to side but are deep from above downward their anterior openings the nostrils look almost directly downward and are the narrowest parts of the passages The air passing into the nose rushes upwards and coming into a wider cavity eddies slowly backwards to the throat thus coming in contact to the greatest possible extent with the warm moist lining of the nose just as a stream running into a broad shallow pool slows into gentle eddies and deposits its suspended particles

The Effects of Obstruction When the nose is obstructed this filtering moistening and warming process is more or less lost and the mouth throat and windpipe try in vain to do its work they become dry in the attempt and the throat and lungs become unhealthy and liable to disease Thus children suffering from obstruction of the nose are liable to bronchitis and are more susceptible to consumption Mucus collects in the unventilated nose forms a breeding place for germs and is swallowed to the detriment of the digestion growth and general health The resulting inflammation or catarrh spreads along the little tubes from the throat to the ears and causes deafness and in severer cases abscesses and discharge Apart from deafness a blockage of the nose has the curious effect of preventing mental concentration so that the child becomes stupid

The instinctive habit of breathing through the nose is very deeply implanted a child afflicted with nasal obstruction makes when asleep very remarkable and persistent efforts to draw the air through the nostrils into the lungs a powerful suction or negative pressure is developed the air passages become congested and the lower part of the chest is drawn in by the strongly acting muscles of respiration The result is "pigeon-breast'—a long narrow chest with prominent shoulder-blades and a hollow at the lower end of the breast-bone

Adenoids, the commonest cause of obstruction of the nose in children are often associated with a characteristic deformity of the face which is probably largely the result of an alteration of the mechanical forces applied to the bones during the period of active growth The normal child s mouth is ordinarily shut the jaw is supported by a suction between the tongue and the roof of the mouth and the tongue makes constant outward pressure on the back teeth When however the mouth is habitually open the weight of the lower jaw is supported by the cheeks which press inwards on the teeth Consequently the roof of the mouth is narrow and highly arched and the front teeth are crowded and prominent the nose is also narrow the nostrils pinched and slit like and the lower jaw which has not grown in contact and in conformity with the upper does not close properly If the adenoids are not removed before this configuration is well marked it becomes permanent and though the child may grow out of its adenoids it will not grow out of the deformity

By adenoids is meant an enlargement of the soft tissue at the top of the throat immediately behind the nose This tissue becomes much swollen as the result of a cold but the swelling may subside spontaneously or assisted by treatment if however it remains swollen for long it tends to become permanently enlarged Therefore when the obstruction has only lasted for a few weeks an attempt should be made to reduce it by washing out the nose with a warm saline lotion The lotion may be used in a coarse spray tilted into the nostril from one of the little glass irrigators sold for the purpose or sniffed up from a spoon or shallow cup but perhaps the best instrument is a small indiarubber ball syringe This is applied to one nostril while the child breathes through the open mouth with the head bent slightly forward the lotion gently introduced passes to the back of the throat and returns through the other nostril The nose must not be violently blown afterwards but may be cleared by closing one nostril and breathing gently down the other Indeed this method of blowing the nose should be taught to all children In tiny children a good plan is to pour some thirty drops of the lotion from the filler of a fountain pen into each nostril Breathing exercises tend to keep the nasal passages healthy are useful in slight degrees of obstruction and are of particular value in restoring the habit of nasal breathing after the removal of adenoids but they cannot cure adenoids which are well developed The only true breathing exercise consists in breathing but the action is made deeper and more regular if the arms are raised from the sides to above the head during inspiration and lowered during expiration The movements should be slow and steady about five to the minute and care should be taken to see that the mouth is firmly closed and the nostrils well expanded while the air is taken in When adenoids have caused definite obstruction which is not relieved within a few weeks by this kind of treatment they should be removed and this is especially the case if any deafness earache or ear-discharge has occurred No child of school age is too young for this operation and there is very little tendency to recurrence after really thorough removal

Ozaena or Atrophic Rhinitis A mattery discharge from the nostrils is not uncommon in badly nourished children of the poorest classes If recent it can usually be cured by regular syringing but if it be neglected, it is apt to cause permanent damage to the lining of the nose, which results in the formation of intensely foul-smelling crusts within the nostrils This condition which is called *atrophic rhinitis* or *ozaena* is incurable when well established though its offensiveness can be kept in check by persistent treatment A mattery discharge from *one* nostril in a child is very suggestive of a foreign body ' bead or button having been put into the nose

The healthy growth of mind and body thus depends largely on the health of the nose and its neglect has prevented many a child from becoming a useful member of society H S B

NOTATION, HISTORY OF.—(See ARABIC NOTATION)

NOTTINGHAM, UNIVERSITY COLLEGE — Founded in 1880 by the Corporation of the City of Nottingham University College received a Royal Charter of incorporation in 1903 It is affiliated to the University of Cambridge and there is a Day Training College for Teachers under the Board of Education The courses of study provided correspond to those given at the newer English universities in the faculties of arts and science they have a strong commercial industrial and technical bias This is especially noteworthy in the technological department where the local industries of lacemaking and hosiery are dealt with educationally Engineering metallurgy and mining are also provided for A diploma in mining engineering is granted and graduate students and others who have taken a complete course with success are elected Associates of the College The examinations usually taken are those of the University of London, as the College does not itself possess the power of conferring degrees The students in the evening classes are very numerous totalling nearly 2 000 while the day students amount to about one third of that number The College, being of municipal foundation should be unhampered financially and, in addition to the contributions it receives out of the local city and county rates it is subsidized by Government grants and private benefactions

NOVA SCOTIA, EDUCATION IN.—(See CANADA, EDUCATION IN)

NOVA SOLYMA, THE.—(See UTOPIAS EDUCATIONAL)

NOWELL, ALEXANDER (1507 or 1508–1602) — Was born at Read Hall on the Calder in Lancashire and educated at Middleton near Manchester, until at 13 he became a member of Brasenose College Oxford His biographer Churton records that he resided at Brasenose for thirteen years and afterwards bestowed on the society thirteen scholarships ' He had as a fellow student Fox the martyrologist At 20 he was a public reader of logic in the university he took his bachelor's degree in 1536 and his master s in 1540 He became master of Westminster School in 1543, being the second master on the new foundation and appointed by the king He was "diligent in teaching the pupils pure language and true religion," and for the latter he used the books of the New Testament in the original Greek In 1553 he was elected M P for Looe in Cornwall, but was excluded from the House because he was also a prebendary of St

Paul's He was obliged to leave England to escape from Bishop Bonner and spent some years in Switzerland and Germany On his return he became chaplain to Elizabeth, archdeacon of Middlesex, and dean of St Paul s He now devoted his wealth and energies to promoting education founding the thirteen scholarships at Brasenose endowing a free grammar school at Middleton in Lancashire and revising the statutes of Tonbridge School The memory of his fame as master of Westminster School led the Archbishop of Canterbury to seek his approval of the statutes proposed for his new school at Rochdale in Lancashire Nowell's chief educational publication was his *Catechism* which was laid before Convocation in 1562 and approved "to be taught by the universities and to the youth wheresoever they be taught their grammar in any private men s houses A smaller Catechism was published in 1572 and became a standard manual of religious instruction, the larger being enjoined in the Canons in 1571 and the smaller in the statutes of many of the old and new grammar schools

NUMBER CONCEPTS, EARLY—The need for numerical calculations arises from the fact that we live in a material and limited world so that we have constantly to reckon how we may attain certain ends by the means at our disposal

The earliest calculations were certainly of a rough-and ready kind and among primitive races the power to grasp definite numbers of any size is very limited, also the power to deal with abstract number is of very late development

The key to the development of number knowledge in the child seems to be given to a great extent by noting its development in primitive races If this is so, we may rightly assume that familiarity with general terms such as "long ' heavy etc and the comparative terms "longer ' "tallest,' etc form a real preparation for number concepts

When we come to definite number work we have to deal with three aspects of it Counting group imagination and measuring

Counting is the mere recognition of succession, and the teacher must guard against the idea that, because a child can count up to ten it has any knowledge of the group ten In developing group imagination we are endeavouring to make the child familiar with groups of discrete objects In developing the measuring idea we are helping the child to realize that an undivided whole can be measured by a smaller unit

The earliest ideas must come through the handling of real objects in as great variety as possible Only in this way can any real grasp of abstract number arise in the child s mind

Also we shall make use of the natural interests of small children since the child who sees purpose in its work does that work with far more zest and intelligence so the work will be done in connection with toys and games Tiny children can thread beads play at nine-pins make paper objects Later on, children can play at shops, trams banks soldiers, etc They will enjoy such number games as dominoes throwing at a target etc Their hand work will serve to develop the measuring idea as well as their games at shopping where weighing and measuring with varying units may come in

The second stage is reached when the child uses sticks or counters or draws strokes or dots to represent different objects At this stage, the child may begin to associate the symbol for certain number groups with the group of actual things, or with the counters, strokes etc It will begin to keep records in its games, and gradually grow accustomed to the use of symbols

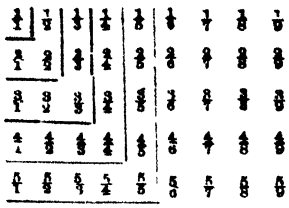
Following the lines of race development the number work will, from the outset include all four processes The growth in difficulty will be the growth in the size of the numbers dealt with not the dealing with first one process and then another

Incidental number work enters into many of a child's natural and earliest activities It would be well if number lessons were deferred till 8 or 9 years of age M S

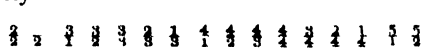
NUMBER.—Although the use of numbers is of immemorial antiquity clear ideas about their nature are a very recent product The whole subject as sketched in this article dates from 1872 when Dedekind published his famous treatise, *Was sind und was sollen die Zahlen*

Cardinal Numbers. The fundamental numbers are the cardinal integers represented by the symbols 1 2, 3 etc which are used in counting the items of an aggregate, collection or class of things of any kind Two aggregates have the same number if and only if their constituent members can be brought into one-to-one correlation Thus if and only if at breakfast there is a saucer for every cup and a cup for every saucer, the number of cups and of saucers is the same Aggregates whose constituents can thus be correlated are termed *similar* This is simple; but it is far from easy to say what the number that belongs to a set of similar aggregates actually *is* According to the most satisfactory definition first proposed by Frege and afterwards independently by Mr Bertrand Russell the sevenness of (say) the days of the week consists in their membership of a class or aggregate whose constituents are all possible collections of seven things and the number seven is that class, and nothing else Or in general the number of a class is the class of all those classes that are similar to it

Finite and Infinite Numbers According to popular ideas a countable aggregate has a *finite* an uncountable aggregate an *infinite* number of constituents Georg Cantor expressed the distinction more accurately by the statement that an infinite unlike a finite aggregate has parts which are similar to the whole The aggregate of all the whole numbers is a simple instance Underneath the integers 1 2 3 4 etc one may set down the integers 10 20, 30 40 etc with the certainty that for every number in the upper row however far it is prolonged a corresponding number will be forthcoming for the lower row It follows that the lower row although containing only one out of ten of the integers in the upper row is an aggregate similar to the latter and, therefore having exactly the same number The same would be true if the lower row consisted only of the numbers 100 200 300, 400, etc and so on indefinitely It is even more startling to find that the total number of vulgar fractions is also the same as the number of integers, in spite of the fact that there is an infinite number of fractions between any two consecutive integers. This can be proved by arranging the fractions as in the scheme shown on the following page and considering



them in the order indicated by the enclosing lines namely—



It is evident that taken in this way they may be correlated one by one with the integers and are therefore exactly as numerous

The properties that follow from this fundamental character of infinite numbers are sometimes very different from those of finite numbers and are by no means yet fully explored

Irrational Numbers, Continuity Fractions taken in order of magnitude form a *compact* series that is, between any two there is an endless number of others [1] Nevertheless as is well known the series is insufficiently close for many geometrical calculations The diagonal of a square and the circumference of a circle are instances of lengths whose ratios to the side and diameter respectively cannot be measured by fractions but require for evaluation the so-called *irrational* numbers The theory of irrational numbers first given by Dedekind has been improved by Russell Consider the numbers less than a given number say less than $\frac{3}{4}$ These form an aggregate correlated uniquely with the number $\frac{3}{4}$ and therefore with the ratio with which $\frac{3}{4}$ is correlated To express this fact and to distinguish the aggregate from the single number we may call the former the real number $\frac{3}{4}$ There is no single number correlated with the ratio of the diagonal to the side of a square but there *is* an aggregate of numbers so correlated namely the aggregate consisting of all fractions whose squares are less than 2 This aggregate is then the real number $\sqrt{2}$ Thus real numbers fall into two classes (i) rational numbers which are aggregates each containing all the numbers less than a specifiable single number and (ii) irrational numbers or aggregates each containing all the numbers less than a certain ratio which happens itself not to be correlated with any single number

The real numbers so defined can be correlated one to one with the points on any line or the moments of any time interval They are said therefore to form a *continuous* series or *continuum* The number of the continuum is not obviously greater than the number of integers but Cantor proved it to be so It follows that all infinite numbers are not equal, but that some at least have among themselves like finite numbers a definite order of magnitude T P N

[1] This is not a property of fractions as such. By the following rule (Russell's) the integers can be rearranged so as to form a compact series Take in order of magnitude, the decimal fractions less than one; turn them into integers by suppressing the decimal points and transferring to the right any noughts that occur between the digits and the point.

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NUMISMATIC SOCIETY, THE BRITISH.—This was founded in 1903 for the study of British coinage It was at once patronized by the Royal Family, and has usually included about eighteen royal members besides its ordinary and honorary members

A Research Fund was established to assist members in obtaining information about coins of all periods and a library was founded for the accumulation of literature on numismatical and kindred subjects A medal was also instituted for the paper considered best in the year as shown by the votes of the members

The first volume of the *British Numismatic Journal* containing contributed articles and the proceedings of the society was published in 1904, and volumes are usually published annually The articles in these volumes are profusely illustrated, and deal with coins badges medals and portraiture on coins From an historical point of view, they are extremely valuable and interesting They throw light on minting of all periods and on many matters connected with the social life in England as shown by its coins Thus one of the early articles deals with the disturbed state of coinage during the Civil War and the many towns which issued their own siege coins or siege pieces Rebel money and Ormond money are also described

The office of the Society is at 43 Bedford Square London W C

NUMISMATIC SOCIETY, THE ROYAL —This was founded in London in 1836 under the title Numismatic Society of London and received its royal charter in 1904 It is composed of about 300 Fellows and twenty Honorary Fellows Persons of either sex are admitted to the fellowship, the entrance fee being a guinea and the annual subscription also one guinea

The chief object of the Society is the study of the coinage and medallic history of all countries and all ages more especially those of the United Kingdom and the British Dominions beyond the seas The Society endeavours to bring into closer personal relation all those interested in numismatic science and has published memoirs and illustrations connected with the science

The ordinary meetings of the Society are held monthly from October to May at 22 Albemarle Street London W At these meetings papers are read and rare coins and medals are exhibited, and described and explained by the exhibitors Since 1839 the Society has issued to its members a quarterly journal called *The Numismatic Chronicle and Journal of the Numismatic Society* which deals with all classes of coins and medals (ancient, mediaeval, and modern) as well as Oriental coins especially Indian

Finds of coins in this country, information regarding our national collections, and rare specimens in the possession of private persons have in turn, been dealt with in the *Chronicle* and the Society has given great attention to Ancient British and Roman-British coins

A common feature of the meetings of the Society is the announcement of presents from all parts of

the world in the form of literature dealing with coins, medals, and the proceedings of numismatic societies as well as occasional valuable specimens

Famous Finds Among the hoards discovered in this country two are worthy of mention as examples The "Stamford Find" contained about 3 000 late Plantagenet coins and was discovered in October 1866 Of this hoard 188 were selected for the National Collection fifty went to the Stamford Institute and the remainder were disposed of to dealers and collectors The Numismatic Society was able to account for the whole collection

Another hoard discovered in South Hampshire contained 677 Roman and British coins including 13 Republican denarii of the period 172–151 B C 2 denarii of Tiberius and Vitellius 83 silver and 206 copper British coins and over 300 cast copper coins showing the final degradation of the native British type

The only distinction the Society can bestow on distinguished numismatists is its medal which is richly earned by the toil and intricacies of the work of identifying and classifying rare and historical coins But the labour is often richly rewarded by the lessons learnt about the chronology history local administration religion and domestic arts of the great civilized races of other days In no case is this more true than in the study of the coinage of the Greek race on which many works dear to the numismatist have been written The great collections of coins and medals in the British Museum together with the voluminous descriptive catalogues are highly prized

NUNS, THE EDUCATION OF —(See WOMEN IN THE MIDDLE AGES THE EDUCATION OF)

NUREMBERG AS A CENTRE FOR FOREIGN TRAVEL —(See TRAVEL CENTRES ABROAD)

NURSE, THE TRAINING OF A —Until Florence Nightingale started a systematic training the nursing of the sick was entirely done by women belonging to the religious orders The nuns served their day and generation in this respect in a very marked degree and the qualities of devotion to duty unsparing and cheerful service for others which are characteristic of their work are required in just the same degree to day in those who would become successful nurses

The girl of to day has many advantages in the way of education that must prove of great assistance to her but unless she has certain innate qualities of mind and heart no amount of teaching will enable her to succeed in the profession of nursing An eager and perceptive mind unwearying instincts of kindliness patience gentleness cheerfulness, and unselfishness in no common degree are all essential These are some of the qualities that go to make what is called a "born nurse" and they form a most valuable fundamental basis on which to build up a highly skilled trained nurse

Preparation for Training While a girl is still far too young to enter as a probationer for training, there is much that she can do to prepare herself for this work When still at school she can acquire habits of punctuality, obedience method, and thoroughness, as well as perseverance concentration, determination, and reliability

Personal hygiene should be carefully cultivated and games and all things which tend to a healthy life, should be indulged in for it is particularly necessary that a girl should be strong and healthy in every way before taking up a nurse's life

The earliest age at which training should be begun in a large hospital is 21 years

It is sometimes difficult for a girl to know how she can employ her time to the best advantage after leaving school until she reaches this age Any work to do with children will prove valuable as the qualities that are developed in this occupation are most desirable in a nurse

For those who can afford it a Domestic Economy Course could be taken up with very real advantage This course is sometimes arranged for pupils at the school at which they are educated or in the large towns the technical schools provide it

Another useful way of filling up the time is to take a course of training in a physical culture college If this is too expensive it is always beneficial to study what may be done to get the feet in very good order Any trouble with the feet often proves a serious stumbling block to many who wish to become nurses and sometimes the matter might have been rectified beforehand if care had been taken

A girl can also usefully fill in the time until she is old enough to begin training as a nurse in qualifying as a dispenser The knowledge thus gained is often most valuable in her subsequent career

It is absolutely necessary for some girls to remain at home for the intervening years but it may be said for their encouragement that the usual work of a house cooking etc makes a good preparation for a nurse s career to say nothing of the moral benefit derived from the unselfishness such work often demands

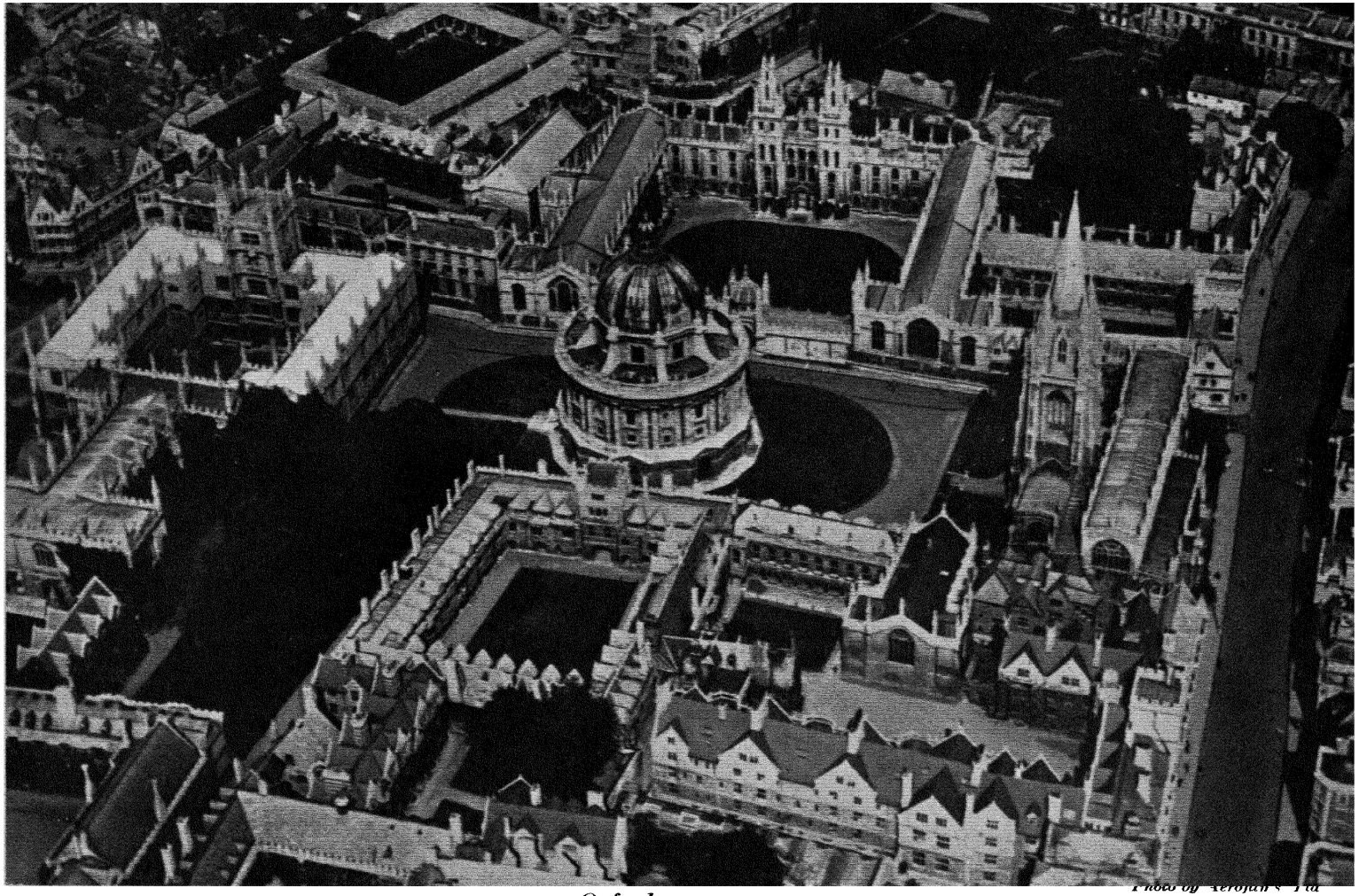
Even if a girl must be engaged in some totally different kind of work before taking up nursing she should use every opportunity of getting all the knowledge possible on such subjects as elementary physiology anatomy and hygiene If she has become even a little conversant with these subjects it will materially lessen the strain on her when she takes up her practical work

The Work of a Probationer If there is a great desire to begin nursing as soon as possible a probationer can be received at most of the children s hospitals at an earlier age than at a general hospital The course is usually for three years and before taking it up a girl should realize that at some of the large training schools previous hospital experience is an absolute bar to admission and that when entering a general training school her previous experience will not usually count into her training, and she must begin at the lowest rung of the ladder again It must also be remembered that nursing is strenuous work and tells on the immature physique of a girl On the other hand the training at many children's hospitals is exceedingly good and may prove a real asset in a nurse s later positions

Before seeking admittance to a training school at a general hospital the applicant must be at least 21 years of age, and she must have had a good education

The course is usually for four years before a full certificate is granted and, as the engagement is a binding one, it should not be entered into if there is any doubt that the candidate will not be able to fulfil her contract A candidate has sometimes to wait some months before she can secure a vacancy at one of the larger training schools

Preliminary training homes are attached to some of the large hospitals, and the work done at these



Oxford

The central group of buildings as seen from the air with The Camera in the centre

From left to right Exeter College and Garden and Brasenose College are shown in the near foreground across the middle the Bodleian Library The Camera and St Mary s Church in background Hertford College and All Soul s College in the distance New College and Queen s College

Photo by Aerofilms, Ltd.

homes for six weeks before the probationers enter the wards of a hospital is of the greatest assistance Instruction is given in bed-making splint-padding, bandaging, housework invalid cookery, elementary physiology, anatomy, and hygiene The work is arranged systematically and the probationers get a good deal more individual attention and instruction on technical details than is possible in the rush of a busy ward They also get accustomed to the method and routine of the daily work

The Training School of a General Hospital. At the conclusion of their preliminary course the probationers who have shown aptitude for the work are transferred to the wards of the hospital and the qualities of heart and brain are called into full play

Besides their practical work and instruction in the wards, weekly lectures are arranged for the probationers These are usually given by members of the medical and surgical staff and the matron

In the best organized schools small weekly classes are held and Sisters go over the previous lecture explaining the various points and clearing up anything in the lecture which has not been understood by the individual probationers

Certain hours during the week extra to the usual off-duty time are set aside for study These study hours are spent in a class-room and are presided over by a responsible person

Examinations are held at various times during a nurse s training and the Final Examination must be passed before a certificate of training is granted

Throughout her training a careful record is kept of a nurse's practical work and a due proportion of time is given to the different branches of nursing In the larger hospitals there is naturally a wider field in which to gain experience but the strain is proportionately greater and unless a girl has quite an average amount of health and strength, she would be better advised to seek work in the smaller hospitals

The life in itself is a healthy one The regularity and discipline of the daily routine both in the wards and in the nurses home are favourable to the strengthening of the mind and body provided there is sufficient stability of both to begin with

The training given in the larger poor law infirmaries is often exceedingly good and as they have no medical schools attached a nurse has unique opportunities of gaining a great deal of practical experience

Specialization After a nurse has gained her certificate of training if she can afford the time, it is wise for her to take up other branches of the work It is quite impossible to include in the four years' course of general training special instruction in some of the branches in which to become proficient takes an appreciable amount of time

A midwifery qualification is specially useful and could be taken on completion of training either in a nurse s own training school or if not, in one of the special hospitals provided for maternity patients The course is from four to six months the fees for instruction varying with the different schools The full course should be taken which enables a nurse to enter for the Central Midwives' Board Examination

If a trained nurse contemplates taking up work abroad a midwifery qualification is usually an essential

Another equally useful asset to a nurse is a thorough knowledge of massage and Swedish exercises The period of training varies from six months to twelve months If the Examination of the Incorporated Society of Trained Masseuses is taken twelve months training is now required

Electrical and X Ray treatment opens another field of work and can be taken up with advantage This is specially useful if combined with a massage qualification

A certificated nurse can gain valuable experience by taking a staff nurse s post in any of the special hospitals as for example those set aside for treatment of diseases of the eye or skin or for gynaecological patients and also in hospitals for infectious diseases

Posts Open to a Trained Nurse There is an ever-widening field open to the trained nurse and it may be of some assistance to name some of the many channels into which her activities may be guided Mentioning the posts under Government first there is Queen Alexandra s Imperial Military Nursing Service A candidate must be fully trained before applying to the Matron in Chief at the War Office She joins as a staff nurse and in due course gets promotion to a sister s post and it may be she finally attains a matron s position There is also the same service in connection with India but the vacancies for this service are much less numerous

Another Government Service open to fully trained nurses is Queen Alexandra s Royal Naval Nursing Service A candidate joins as a sister The vacancies, which do not occur frequently, are eagerly sought after

The Colonial Nursing Association undertakes to engage nurses for Matrons' and Sisters' posts for the Government and other hospitals in our Colonies and elsewhere abroad

Lady Minto s Indian Nursing Association is another organization founded to enable nurses to take up private nursing in India

In Great Britain there are numberless posts open to the trained nurse There are the higher posts in hospitals such as Matrons and Sisters' posts Private nursing offers very remunerative and useful work to a large number of nurses and also district nursing under the Queen Victoria's Jubilee Institute Trained nurses are more and more in demand for school nurses nurses for tuberculosis dispensaries, health visitors sanitary inspectors etc To qualify for the latter posts, the special examination for health visitors and sanitary inspectors must be taken

As well as qualifying for all the posts that are open to a trained nurse it is well to remember that a successful hospital training is valuable in the method it teaches and the insight which it gives into human needs and it is a most useful asset to any woman throughout her life even if she gives up professional nursing altogether

A McI

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NURSERY RHYMES, THE EDUCATIONAL VALUE OF —Nursery rhymes are the classics of childhood the educational value of which can hardly be exaggerated They herald our waking into conscious life, and accompany us through our most impressionable years We cannot, in our own case, recall how we were hushed by the lullaby and soothed by the dandling verse, how the nursery

jingle stirred us into activity, and how our mental horizon was enlarged as we realized the simple incidents that are related in these rhymes But, as in other departments of education, it may be said that we learn by what we forget The rhymes pass from memory, their influence on our power of speech and on our ear for rhyme and rhythm remains

Not that the rhymes are readily forgotten In collecting rhymes in their variants I found that old people who declared that they knew none, distinguished between those they had heard and those they had not when the rhymes were recited Nay, they would sometimes take exception to an expression, substituting a different one One old lady of over 80 declaring that it was, of course, nonsense, supplied an additional line to *This is the House that Jack built* which mentioned the knife that killed the cock on the wedding morn thus recalling an ancient sacrificial rite

In the nursery the rhymes have always held their own Mothers and nurses have faithfully handed on what they had received modifying an expression only when forced to do so by a later standard, rarely dropping a rhyme altogether, and only reluctantly adding to their store The oldest printed collections are of the early eighteenth century, their contents are practically identical with those of the collections of to day

This potent charm of the rhymes is due to their antiquity They are relics of customs and usages of the past, into which a later age reads a meaning of its own As relics, they appeal to the imagination and by doing so remain a living force

The origin of the rhymes is shown by collating their variants and by comparing them with the rhymes of other countries Thus *Patty cake*, on inquiry turns out to refer to the cake baked in honour of the god Thor, *See saw Margery Daw* refers to the barbaric rite of sawing in half the old woman of Mid Lent *The Dish that ran away with the Spoon* is reminiscent of the effect on the household the mistress of which joined the witches' gathering This antiquity of the rhymes explains their persistency For mother or nurse, in addressing the child, instinctively draws from the store that lies deepest down in her memory In doing so she finds herself in the possession of material that appeals to every stage of child life

Diversity and Origin A distinguishing feature of nursery rhymes is their diversity which hangs together with their origin Here is repetition to primitive sing song as in *Bye bye* here are imitative calls as in *Bah, bah Blacksheep* and in *Roley poley*, originally a call to thunder Here are set words, such as *Thumb bold* and *This little pig went to market*, used in playing with the fingers and toes, which is still a common sport among savages Here are jingles descriptive of special movements, such as *Here we go up up up* and *Ride a cock-horse*

Some nursery pieces depend for their consistency on alliteration—an old and neglected form of versification—such as *Peter Piper* Others are alphabet rhymes such as *A apple pie*, which attach a meaning to each letter in the way of Northern rhymes Again, there are pieces set in dialogue form, such as *Who killed Cock robin?* and in cumulative form, such as *This is the House that Jack built* and *One old Oxford ox* The number rhymes are based on the heathen chants that were formerly recited on Twelfth Night

The larger number of pieces are set in verse that depends for its consistency on tail rhyme, and many forms of stanza are represented There is the short rhymed couplet, such as *Jack and Jill went up the hill* and *The Queen of Hearts* there is narrative in four-lined stanza, such as *There was an old woman who lived in a shoe* Many of these pieces contain heathen allusions, and are further endeared to the child by being sung to a traditional tune The love of tune is so great that many popular ditties are included in nursery collections

These few remarks show that nursery rhymes are the product not of one period or of one mind, but the outcome of a selection made from the traditional store by countless generations of mothers and nurses In every well-appointed nursery baby learns to do *Patty cake*, and the older children are made acquainted with *Humpty-Dumpty* and *Little Miss Muffet* But the influence of the nursery in these days is curtailed by sending very young children to school and in the school sad to say, there is a declared preference for foreign ways and methods with a consequent disregard of what is national The " Kindergarten ' as the name implies secures favourable conditions of growth It is indifferent to the quaint charm of nursery classics that set the child wondering and, by so doing, stimulate the powers of the mind It takes no account of the various forms of versification and melody that lie stored in nursery literature Again, " Swedish drill secures suppleness to the limbs, it neglects fostering the spirit of emulation that lingers in action rhymes such as *Mulberry Bush* with its dramatic possibilities and *Oranges and Lemons* with its healthful tug of war

The advantages are now generally recognized of bringing the national sports of cricket and hockey into the playground Perhaps a later and wiser generation may see its way to introducing cumulative recitation dialogue, and play song into the classroom thereby cultivating in the child a love for its nursery classics, and bringing it into fuller possession of its heritage L E

NURSERY SCHOOLS —There has been much emphasis of late on the need for care of children during the formative years It is agreed that the wisest protection and care are needed in the first seven years for at this period when growth is most rapid the child faces greater dangers than at any other time dangers which threaten to weaken thwart and hinder its healthy development Much is being done to protect and save child life and to decrease infant mortality Infant Welcomes, Welfare Centres, Schools for Mothers are to be found in most districts doing valuable work in saving and strengthening life Many people think that to extend this type of work until it encircles every child is to do all that is necessary for child welfare, and they regard with hostility the birth of the " Nursery Schools " movement If the child were a little animal for whom bodily care and comfort are first and last necessities nothing further would be required However we know that the child is a human being whose needs of mind and spirit are as insistent as those of the body The body is but the instrument of the self, though an instrument that must be perfect in function otherwise the " self " cannot have full expression or health The protection and nurture of the body are fundamentally important but are not the only matters of importance in the care of young children The beginning of feeling and emotions that eventually

determine character and attitude to life, the first philosophic hows and whys the investigation into causes, seen and unseen are surely as important as cutting teeth and learning to walk! Yet, while the tenderest and wisest care is given to a child who is not growing healthily while healthy children are given all the means of growing stronger, comparatively little is known about and practically nothing done to help or safeguard the growth of all that is essentially human—the heart and mind!

The Scientific Spirit in Nursery Schools With the establishment of nursery schools arises the possibility of beginning wide research and experiment in this direction and of extending child hygiene until it covers all growth, and is not limited to physical growth It follows then, that the Nursery School movement will be animated by the spirit of scientific research It would be the greatest calamity if these schools were all organized to a type—especially if the type in any way resembled that of traditional education for older children This is unlikely as there are signs everywhere to indicate a general dissatisfaction with education as it is and the desire to revise its spirit and methods "That education is not a matter of telling and being told but an active process of becoming is a principle as generally violated in practice as it is conceded in theory At no time is this principle more applicable than during early childhood nursery schools in which the children are all growing rapidly must put the theory into practice and provide the best conditions possible for all sided development What are the best conditions?

The Provision of Environment This question is as yet but partially answered and can be answered fully only after scientific experiment has extended further than is the case to day A partial answer comes as the result of hygienic investigations and of the patient and illuminating research of Dr Montessori in what she calls 'psychic hygiene' Her experiments towards finding "right" conditions have been extensive and the Casa dei Bambini represents what she has proved for herself to be excellent conditions for the natural education of little children It is most likely, and certainly to be hoped that many nursery schools will benefit from her work and take as their starting point the conditions she advises while others approach the subject from other directions Her work throughout is an endeavour to follow natural growth by providing the child with the means of doing fully all that Nature is urging him to do All childish activities are made for some purpose of nature and infant education should give the child endless opportunities for acting in these purposeful ways by surrounding it with toys and occupations that enchannel energy in the direction of Nature's purpose This Dr Montessori claims, is what her educational apparatus does

Education should as far as possible be an unconscious process, and this is achieved where the child learns from his surroundings and toys rather than from a teacher practising his art Thus the schoolhouse (or shed, if it is an open-air school) with its equipment must be carefully considered

Just as a gardener digs into the soil the requirements of the plants, so the school should surround the child with the means of growth and in this carefully prepared environment it should be left to grow with the same freedom as the plants Teachers, like gardeners must be the servants of Nature, not her masters; their work it is to discover Nature's purpose and help the organism to work in harmony with it Thus children should be left to play freely alone, or in self-chosen groups, following Nature's "urge' rather than spend their days in "educational play," directed by the teacher, and in groups arbitrarily chosen

Characteristics and Methods. It must be emphasized, however (because of the misconceptions which abound caused doubtless by the use of the word school'), that no attempt at formal teaching in nursery schools, though the child learns and is taught many things, is contemplated The nursery school grows naturally out of home life and is in a way a home on a larger scale with the difference that it is a home built for the comfort convenience, and education of children, and not for adults The child begins its education in its home and it is this education that the nursery school carries on, extends, and increases until the child is ready to pass into the elementary school The routines are very similar—baths, dressing playtimes, meals, sleep etc —and it is in connection with this routine that much education arises The time arranged for these matters must be sufficiently elastic to make education possible and avoid the rush that necessitates adults doing nearly everything for children that they ought to do for themselves Such unprofitable hurry frequently characterizes homes day nurseries and crèche where emphasis is put on the order and routine of the house rather than on the training of children Such treatment makes children (quite justifiably) ruffled and irritable as we should be if we were turned, twisted, lifted sat down and were victims generally of some superior giant moving with amazing speed It also robs the child of much valuable experience It is to be hoped that nursery schools will avoid the artificiality of planning and performing daily games exercises drills and occupations as a means of education and utilize instead all the excellent opportunities that arise in the day's routine Bath and dressing time can be a learning time for both attendant and child The attendant (who if not a nurse must have had proper training to prepare her for the work) is always on the watch for any signs of ill health deformity bad or irregular habits and has at this time the opportunity of a daily inspection The child has opportunity for much muscular exercise in unhanging sorting and putting on its clothes manipulating buttons, bows, etc has exercise in memory, independence, self-reliance, mutual helpfulness etc, learns order, method and neatness So, too, can meals be made the opportunity for a training in grace courtesy and self-control, in consideration for others, all is necessary for the child as the feeding of the body

Record-keeping. In every nursery school where the staff is large enough to make it possible careful records should be kept of children's health, growth, and general progress These should be accompanied by reports of social conditions, the school staff must be social workers as well as teachers and nurses in close touch with the homes and parents Parents do not resent such visits, but generally are so eager to do their best for their little ones that they welcome all helpers and are only too eager to discuss matters with them and give all desired information These records, if sent on to the elementary school to which the child goes at 5, could be of considerable help to both medical inspectors and teachers

At the beginning of the article the hope was

expressed that these schools should be a means of research and experiment in the value of infant education This undertaking would necessitate the keeping of detailed psychological and biographical charts, and could only be possible in schools where the staff is large enough to give time for careful and systematic observation and where those who undertake it have been trained to work with scientific method

If many schools would undertake this research and keep the necessary records in five years time there should be much *data* to serve as a valuable guide in making the education of little children as wise and scientific as the substitution of hygiene for mother-wit has made the care of their bodies

L DE L

NURSING, THE TEACHING OF CHILD—Anyone wishing to prepare herself for child nursing or the career of a nursery nurse should undergo the training of one of the colleges which have been established for this special purpose The fuller and wider the training the better, for the nursery nurse should be able to respond to the varied aspects of a child's life

The usual course of training includes practical instruction and experience in cookery laundry work housewifery needlework, and the care and management of young children To this is added in some colleges a short course in a children s hospital or in the children's ward of a general hospital and an educational course covering the mental development and intellectual training of a child up to 10 years of age The student will find the hospital course of incalculable value for the knowledge gained in sick nursing the lessons in self discipline, and the development of character

The care of little children is bound up inextricably with their mental development and no training can be really complete that does not take this into consideration the study of child nature and the principles of infant education should form a large and essential part of any scheme of training for nursery work

As regards age the student should preferably be between 18 and 35 years of age The young bring to their work enthusiasm energy, and an easy adaptability while the woman of 30 to 35 will have a wider sympathy gained from a greater comprehension of life and the needs and rights of parents as well as children

When it is known some years ahead that a young girl is likely to take up the career of a nursery nurse, suitable preparation may be made by experience in gardening and indeed in any branch of a country life The pursuits and interests of childhood are endless, the course of training is unavoidably too short, and a student should, therefore, prepare her mind for the care of children by interesting herself in what will interest a child

In the college selected for training the student will learn the technical details of the work and it is hoped, a sense of the great responsibility attached to it

The personal qualities that are needed are a love of children and self sacrifice a courteous manner and sound commonsense, truth and honour in life and speech

For particulars of the training of the various colleges, application should be made to the respective Principals Among many, mention may be made of the Princess Christian College, Withington Manchester, St Christopher's, Tunbridge Wells, and the pioneer college founded, in 1892, by Mrs Walter Ward, The Norland Institute, 10 Pembridge Square, London, W 2

I S

NURSES, SCHOOL.—(See CLINICS, SCHOOL, SCHOOL NURSES)

NUTRITION AND MALNUTRITION.—Nutrition is the process by which the health and various activities of the body are maintained by the proper adjustment of income in the form of food, to loss—whether by work, by heat, or by absorption for the purposes of maintenance and (in the case of children) of growth

Malnutrition is the condition which ensues upon continuing disturbance of the normal balance through insufficiency or unsuitability of food, through over-expenditure of energy, or through interference with absorption distribution, or utilization of nutriment by disease or unhealthy surroundings

The Chief Medical Officer of the Board of Education says "Defective nutrition stands in the forefront as the most important of all the physical defects from which school children suffer Indisputable though the fact is, there is no subject the elucidation of which is more baffling to the medical inspector, no condition more difficult accurately to estimate with causes more complex and interwoven Every child found suffering from defective nutrition requires therefore individual study and thought (Annual Report, 1910)

The Schedule of Medical Inspection of School Children in England and Wales provides for the assessment of the nutritional condition The children are thereby placed in four categories viz (1) good (2) normal (3) below normal and (4) bad

Taking the last two categories together as representing two degrees of severity it is found that the amount of undernourishment present in the elementary school population varies between 10 and 15 per cent

For the purpose of ascertaining the nutritional condition of the children, a measuring rod and scales are necessary in every school The height and weight of each child should be compared with a standard table such as is here given

TABLE OF AVERAGE HEIGHTS AND WEIGHTS IN CENTIMETRES AND KILOGRAMMES OF CHILDREN ATTENDING LONDON PUBLIC ELEMENTARY SCHOOLS

	Boys		*Girls*	
Age	Heights	Weights	Heights	Weights
3	92	14 5	92	14 3
4	98	16	97	15 5
5	104	17	103	16 8
6	109	18 7	108	18 2
7	116 0	22	115 4	21 2
8	120 5	23 5	120 2	22 9
9	125 2	25 5	124 7	25 0
10	129 8	27 6	129 9	27 2
11	134 3	29 9	135 0	29 9
12	138 7	32 5	140 6	33 3
13	143 1	36 4	146 8	37 7
14	148 3	39 2	152 4	41 8

[*N B*—Heights and weights under 7 belong to a separate series of measurements upon smaller numbers of children, and are probably below the general London average]

The Detection of Malnutrition. It is found that the age of a child does not affect the ratio of height to weight, thus a boy aged 8 who measures 130 cm., which is the average of a child of 10, should also, like a boy of 10, weigh 27 6 kg

Any child appreciably under the corresponding weight for height should be subjected to careful medical examination to ascertain whether the condition is due to natural causes or due to interference with normal nutritional processes The ordinary appearance of the ill-nourished child may be deceptive The effects of ill-nourishment are selective in their distribution In starvation it is the nervous system which is last to be affected In the earlier stages the face especially is spared, and it would seem as though there was a provision of nature which attempts to hide from the enemy for as long as possible the fact that the family or tribe is becoming weakened by privation

A careful sociological investigation in London into the causation of close upon a thousand cases of malnutrition gave the following results No less than 30 per cent of the children came from homes which were described as "superior", less than half came from homes where there was grinding poverty Malnutrition is not infrequent in the families of small clerks where an undue proportion of income goes towards 'living up to their position" Tuberculosis was present in 20 per cent of the cases The problem of malnutrition is identical with that of tuberculosis Indeed tuberculosis is not to be looked upon from the social point of view as a disease so much as a symptom of social conditions The seeds of tuberculosis are ubiquitous all town children are constantly menaced with it, the majority, in the presence of adequate food and sufficient fresh air are able to ward off the attacks which few altogether escape but the ill nourished child is the almost certain victim of the disease

Decay of the teeth and oral sepsis are present in many cases of malnutrition

There is confined entirely to better class homes, a well-defined nervous type of child suffering from malnutrition These children suffer from congenital weakness they are often "only children" and in many instances there is a history of premature birth They are emotionally unstable and present extreme difficulty to the teacher Such children are not found in the poorest homes, because it is only by the lavish expenditure of solicitous parental care that they survive the perils of infancy, and they are consequently of the "spoilt" type of child

In a minority of cases, under-nourishment is due to exceptional loss of energy Want of sufficient sleep is frequently a factor especially in younger children In older children, rapid growth and over-employment are by no means uncommon as factors

It should be remembered that growth is not maintained at a steady level throughout school life, there are seasonal variations within the bounds of a single year and there are special years in school life when growth proceeds at a maximum intensity Such a period precedes the onset of puberty, at this time many children "overgrow their strength," and enforced rest in the daytime may be necessary owing to the frequency with which, especially in girls spinal curvature develops

Steps taken to Remedy or Guard against this Condition. All forced labour and forced participation in games should be forbidden to ill-nourished children Children differ from adults in regard to the relative proportions of the ingredients necessary in their food, and also in regard to the relative bulk of food daily required The imperious necessity for growth demands frame forming elements which can only be obtained from those foods rich in protein, which are typically represented by meat, cheese, milk, and eggs Children also require a larger relative bulk of food because of their greater relative loss of heat than the adult It, therefore, follows that the food of the child must be more concentrated than that of the adult The importance of sufficiency and proper distribution of warm woollen clothing in preventing undue strain from loss of heat must also be borne in mind

Recently the prime importance of certain accessory food factors or vitamines has been established They are found only in certain articles of food and in minute amount But deprivation of these articles is followed by various malnutrition Three different factors have been shown to exist the anti-rachitic found in butter, cream, cod liver oil and beef or mutton fat, the anti neuritic found in eggs and the germ of wheat and the anti scorbutic found in the juices of certain fresh vegetables and fruit and in yeast

After the issue of the Report of the Inter-departmental Committee on Physical Deterioration, the Provision of Meals Act was passed in 1906 empowering authorities to expend money from the rates for the purpose of school feeding The meals provided by the authority take the form usually of dinners It may be taken for granted that, in general the parent can provide sufficient starchy food and the meal provided by the authority needs to be one on a meat basis, rich in proteins This disposes of the question as to whether breakfasts or dinners are most suitable Breakfast is largely a starchy, while dinner is a protein, meal

Mal nourished children however, are often unable to eat the dinners provided For them, the system of "milk meals,' in which milk is served round during the morning recess, has met the difficulty Milk is the great stand-by in all debilitated conditions, it contains in itself not only all the food-stuffs necessary, but also substances of special and unique value for growth Ill-nourished children from non-necessitous homes can share this provision without injury to family pride, as the parents volunteer to pay the cost in full C J T

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O

OBERLIN, JOHN FREDERICK (1740–1826) — He was born at Strasburg, where his father was a professor in the gymnasium, was educated for a military life, but turned to the church and in 1767 became pastor of the Ban de-la Roche in Waldbach This office he held until his death The people of this secluded valley were ignorant poor and miserable, and Oberlin at once set himself the task of improving their condition His efforts met with much opposition among the people and more than once an attempt was made upon his life He devoted his attention more especially to the children and with great exertions and much personal sacrifice succeeded in erecting five schools in the districts of his scattered parish securing teachers qualified through his own personal instruction In these schools, reading writing and arithmetic were taught to all and for the higher classes he added physics geometry astronomy, geography history, the duties of citizenship and of public officers and the elements of business methods Singing was taught to all and drawing to the elder scholars Oberlin has the credit of having originated infant schools, and of raising them to a state of high efficiency To help the older members of his con gregation Oberlin gave instruction in agriculture improved sowing and planting introduced new seeds and gave attention to sewerage manures irrigation and the reclaiming of waste lands In 1818 the Royal Agricultural Society of Paris voted him a gold medal for his work in improving agriculture and in diffusing useful knowledge thereon

OBEDIENCE —(See AUTHORITY AND OBEDIENCE, HOME, TRAINING IN THE)

OBJECT TEACHING —Our earliest experiences have to do with objects with things external The senses are potentially active from the beginning sight hearing touch, taste smell—with particular variations of muscular tension and impact and movement and of temperature, all more or less within the organism but mentally external—are in process of constant exercise and of consequent development Education here is by way of objects though not yet regular and systematic Later in school life, our aim in this field of instruction will be to give order and form to the sense-appeal from without and the direction of the mental effort from within

Object teaching then, we understand to be concerned with things of sense, and these will include the phenomena of nature dew and frost hail and wind and rain, in short, all that can fall under sense-observation We do not then exclude the demonstration in the laboratory, provided that it is illustrative of natural object rather than dynamic force and its material of exhibition or examination is an object

In whatever terms we define education, our out look and aim must be in the largest meaning practical, and in early school days we have to direct attention upon objects and afford training in the ability to examine them Our first purpose is to give knowledge of common things and our second is to cultivate the capacity to observe and to form a habit Connected essentially with these two is a third to exercise the beginnings of reasoning and to strengthen and speed its development

Method is plainly important (1) Actual objects must be the material and apparatus of the lesson, not, as a rule the model or the picture (2) The procedure is from *the known to the unknown*, what is plain to the eye or hand quickly making place for finer distinction—the shade of colour or the variation of surface (3) The logical or training method is *heuristic* children in active exploration and search (4) The teacher s speech method is by questioning There will be little direct statement on his part, but much invitation and suggestion, and this, at every stage, to correct observation and make inference exact

Object teaching is not easy the lesson is often found to be tedious Apart from the personality of the teacher—when in the one extreme all is stimulating and forceful, and in the other nothing is—comparative failure may result from want of care in a few points of detail We have a class and not the single pupil and the class may be large This at once means particular difficulties arising from individual variations in (*a*) precedent know ledge (*b*) ability and attainment in sense activity (*c*) disposition and (*d*) preparedness of interest The teacher is also apt to miss the middle way between an ineffective appeal to what is above immediate observation and range of interest and the painful exploration of what is already known The lesson is either too hard or too easy

Object teaching should form a large part of the work of junior classes and should be specially characteristic of infants' schools throughout

A E L

OBJECTIVE METHOD IN TEACHING, THE — Method implies orderly procedure In its practical application it ranges from simple device and plan in the small things of life (*e g* at home or in school) to its highest use as instrument and machinery for the acquisition of knowledge But in all cases it postulates system something from which to begin in progress towards something else, and always towards an end And we must make sure of our beginning in relation to this definite end, whether we mean to learn or teach

Objective is antithetical to *subjective*, as now used in philosophy it refers to the external and actual as distinct from the internal and conceptive. The objective method in teaching, therefore—as in learning—will proceed by way of observation to what may be termed *limited inference* which in turn, will be checked and corrected by observation We come regularly again and again, and with progressive finality to the examination of objective facts and objective things and relations as the recurring test of the accuracy of our knowledge, all the while in process of a more complete acquirement The objective method begins and ends with facts, and rejects dogmas, yet is entwisted inextricably with inference Here Bacon, in his revolt from the

dogmatic method of the schoolmen, was only half effective Newton showed the more excellent way, and we follow in his steps in the apparatus of Froebel or the Dotoressa Montessori—the concrete example and illustration, the blackboard for figure, or sketch or diagram, the model and the experiment

A E L

OBSERVATION BOXES. — (See APPARATUS, HOME MADE)

OBSERVATION OF CHILDREN.—Insistence on direct observation of the conduct of children as the source of the *data* for a child-psychology and a theory of training is the consequence of dissatisfaction with a theory based on the analysis of adult states of mind and formal static theory Till comparatively recent years the child was regarded as an adult in miniature and growth as a regular and proportionate development of parts and faculties until maturity is reached But the physiologist found that the child is by no means an edition in small of the adult with all his organs complete and in size and function bearing the same relation to one another that they do in the adult Moreover the theory of recapitulation came to be applied beyond the strict limits of the physical embryo Hence was made possible a science of mental embryology which provides the observer with a firm theory whereby the life of the child can be mapped out into a number of well marked stages Yet this theory must not be used arbitrarily Child study is objective and its *data* are found in the conduct of children—of normal free and happy children as well as of exceptional ones

The Methods of Observation may be arranged in two groups the first physiological and anthropometric observations being directed to the physical organism—stature weight and build—and the outward signs of abnormal development both physical and mental From the results norms of growth and development are being established so that the comparison of the measurements of any child with the norm may lead to useful suggestions for dieting or remedial treatment

The second group of methods consists of attempts to discover the laws of growth of the mental nature of the child The broad aim of the study is to build up a series of mental types which will illustrate the main interests of a child at any stage of growth the order in which the instincts and emotions break through into life the incidents and things to which these become attached, the sentiments under which they become organized and the ideals belonging to those sentiments If we know these the effective determinants of the child s conduct we have some light on the meaning of his behaviour We can find them out by setting children to express themselves in response to definite suggestions under notable circumstances, and again by unobtrusive observation of them in a state of freedom from direct control or suggestion of parent, teacher or school conditions This analysis of concrete instances of response and invention will be tested by comparison with what the observer can recall of his own early interests moods and desires Autobiography will help and suggest as in a lesser degree will fiction and the artistic interpretation of childhood So also will to some extent biography Methods of observation which aim at the establishment of standards of achievement, either in general mental ability or in subjects of instruction, are included here The Binet-Simon tests (*q v*) may be taken as typical of the former kind of inquiry, the attempts to secure norms of performance in arithmetic reading and spelling—of the latter This second example requires the application of known statistical laws to a large number of individual responses Students of child-life are not agreed as to the value of the child's own introspective accounts of his mental operations though these are of use to the observer as evidence of susceptibility to ideas and personality

S F J

OBSESSIONS —" Obsession " was formerly used to note the assaults of a demon prior to " possession and has recently been applied by theosophists to the haunting of a person's mind by a dead person s spirit In psychological medicine it is used in English synonymously with imperative or insistent ideas, by the French, with *obsessions mentales* and *impulsions intellectuelles* , and by the Germans with *Zwangsvorstellungen*

Obsession has been defined by Legrain as " every cerebral manifestation either of the intellect or of the affections which in spite of the efforts of the will forces itself upon the mind, thus interrupting for a time or in an intermittent manner the regular course of association of ideas ' Every action consciously accomplished which cannot be inhibited by an effort of will is an impulse, not an obsession

The obsessional defect of will is shown by hesitation to perform an act sometimes by counting a certain number before doing it or by indecision for example as to which boot shall be put on first or by inability to dismiss from the mind such questions as " Who created the Creator ? " Why are there not two moons ? etc These have been described as *folie du doute* In other conditions there are promptings to action, controlled with difficulty such as to the utterance of bad language, to homicidal suicidal or vicious acts—all intensely repugnant to the individual Other obsessions are emotional fear usually predominating a pin, a piece of orange-peel or a spider may cause extreme fear or surroundings may give rise to terror, as the being on a height or in a closed or open space Innumerable terms (claustrophobia etc) have been invented to describe these morbid fears which are endless in their variety, the explanation of the same fear is equally varied

Onset and Treatment Obsessions occur in neurasthenic hysterical and hypochondriacal persons There is always defect of will before the actual disorder and during the remissions hesitation, indecision doubt, and perplexity are characteristic of these persons who are for ever changing their conduct of life A shock or other depression of health is the usual exciting cause the ideational form of the obsession being more or less accidental, in early states these vary or several coexist

Willing is the power of transferring activity from one region of the brain to another this is accomplished through nervous connections but is equally dependent on blood supply If the brain is anaemic, will fails more or less completely, thus in a trance, an individual may be quite conscious but unable even to move an eyelid In obsession, also, which occurs in states in which the brain is anaemic, this difficulty in transference of activity tends to the development of what Mercier calls a " parasitic nervous mechanism " which dominates the brain until overcome by some strong stimulus or by the

restoration of a more vigorous circulation On the other hand fear tends to depress the circulation and so to increase the brain anaemia and hence a vicious circle is established which helps to perpetuate the disorder

In youth, any indications of defect of will action should be met by careful attention to the sleep and to the development of a vigorous circulation as well as by direct instruction in habits of decision and confidence such young people should be especially encouraged to play games demanding prompt decision and action H RAYNER

OCEANA.—(See UTOPIAS, EDUCATIONAL)

OCLAND, CHRISTOPHER (flourished 1582 onwards) —Writer of the first text-book for English schools to stimulate patriotism was master of St Olave's School Southwark in 1571 Ocland was offered the post by the vestry at Southwark, at "wages" of 20 marks a year to teach ten or twelve grammarians at first He was to help the usher to teach the *petits* so as to release, at times, the usher to teach writing a subject not usually taught by a staff master of the grammar school If the previous master did not remain on as usher, Ocland was to teach grammar, writing and *petits*, and find his own usher receiving the whole of the allotment for salaries At any rate for a short time Ocland was only master at the Southwark School

Ocland's book the first text book in England to arouse through historical teaching the sense of glory in our country is entitled *Praelia Anglorum*, and was published in 1582 It celebrates the deeds of wars achieved by the English during the reigns of Edward III, Richard II Henry IV V, and VI, Edward IV Richard III Henry VII and VIII, Edward VI and that of Philip and Mary (*i e* from 1327 to 1558) Ocland had induced the Lords of the Privy Council to intervene with the bishops to require his book to be made compulsory in all the grammar schools of every diocese The position of Latin may therefore be gauged by the fact that it is a Latin book of verses which is prescribed in boys' schools from which they are to learn the glory of English achievements in war on the fields of Crecy and Poitiers and Agincourt The Privy Council refer in their letter to the bishops to the desirability of the removal from the curriculum of "lascivious [Latin] poets, commonly read and taught in grammar schools ' and suggest the superiority of a book of English war history over the works of certain of these heathen Latin poets The attitude is no doubt a sign of the growing Puritanism but it is also an illustration of the national patriotism even before the defeat of the Spanish Armada had brought the feeling to its greatest height

Ocland celebrates the whole period of the Hundred Years' Wars, and the account of the warlike deeds of the progenitors of Queen Elizabeth may at best be regarded as a preparatory interest for the historical plays of Shakespeare and the other Elizabethan dramatists Ocland also wrote Latin poems in praise of Queen Elizabeth, contrasting the twenty three years of peace (1559–1582) with the 230 years of war described in the *Praelia Anglorum* It contains a prefatory poem by Richard Mulcaster (*q v*) It was translated into English, in 1585, by John Sharrock The *Praelia Anglorum* is an instance of State interference in prescribing a school text-book (See also LILY, WILLIAM, and GOD AND THE KING) Apparently, the compulsory use of Ocland's book did not last long F W

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ODESSA, THE UNIVERSITY OF.—(See RUSSIAN UNIVERSITIES)

OFFICERS' TRAINING CORPS, HISTORY AND DEVELOPMENT OF THE —It is impossible to understand the organization of the Officers' Training Corps without reference to the part played by the Old Volunteer Corps which preceded its formation in 1908

Volunteer Corps in Universities and Public Schools. The Volunteer movement began in 1859 owing to our part in the Crimean War Within a year, Oxford and Cambridge had each its corps as was only natural their members being mainly young men of military age In 1860 six public schools also formed units these were Eton Harrow Rugby, Rossall Felsted and Hurstpierpoint Subsequently almost every year saw the addition of fresh adherents until very few schools of standing held out But the corps suffered from some of the inherent weaknesses of the public schools They were isolated from one another and valued their peculiarities rather than an efficient uniformity They competed fiercely in rifle shooting without reference to its military value (the Ashburton Shield at Bisley produced excellent scores, the fruit of much careful training and expense) they prided themselves perhaps on a fine band or a smart uniform but when it came to uniting in military work, great variations in the standard of training were observable and a desire not to co operate if it could be avoided The only influence at work to remove this defect was the Public Schools Camp This was started in 1889 by the enterprise of a few commandants of Public School Corps notably Major Temperley of Bradfield and Colonel Hoare of Haileybury It grew and prospered, the principle was established (not without a struggle) that the cadets were to live precisely the same life as the private soldier and they took to it remarkably well The staff consisted of officers of the Rifle Brigade and K R R, who gave their services voluntarily, and for many years the camp was pitched in the pleasant grounds of Government House Aldershot

Organization of the O.T.C On the formation of the Special Reserve and Territorial Force the question of the supply of officers came to the front Officers of these corps would naturally be recruited from the public schools and universities, and so, after some preliminary conference the Public School and University Corps were in 1908 incorporated in one big organization called the Officers' Training Corps The public schools formed the Junior Division O T C, the universities the Senior Division A special department at the War Office was made responsible for the working of the scheme, and the contingents were no longer dependent on local depôts of the regular Army, except in so far as help and advice was always most readily given in arranging field days and other features of the training

The work of the different contingents was standardized by this means. In the Junior Division it was hoped that most cadets would pass the

examination for Certificate A, which covered the groundwork of a subaltern's knowledge and duties A holder of this certificate if he joined the Special Reserve of Officers, had the period of preliminary training reduced from twelve to eight months In the Senior Division there was Certificate B, covering a more advanced syllabus and reducing the period of training in Special Reserve to four months, which could be done in two parts, and be easily fitted into the long vacations

Further annual inspections by officers appointed by and reporting to the War Office were initiated, and thus the general efficiency of the different contingents was kept under careful observation The annual training was organized on lines suggested by experience At first, two camps, with something over 3 000 cadets in each, sufficed for the Junior Division but in 1911 a third became necessary The brigadier the brigade major and the commander and adjutant of each battalion in these camps are regular officers The Brigade of Guards supplies these officers for the camp at Mytchett Farm Aldershot, the Rifle Brigade and K R R do the same at Tidworth Pennings, Salisbury Plain, and the Sandhurst staff at Rugeley, Staffs The schools go in rotation to the three camps which are held simultaneously for ten days at the beginning of August There is also a camp in Scotland Contingents of the Senior Division go into camp generally about the middle of June

Finance Of public money £55 000 per annum has been allotted to the O T C Of this sum, the general expenses of the central organization take a part But the main use to which the money is put is in allotting capitation grants to the various contingents The Senior Division receives £2 and the Junior Division £1 for every efficient member each year Efficiency depends on attendance at drill (not less than forty drills per annum in the Junior Division) attendance at camp and firing the musketry course The money thus put at the disposal of contingents is usually augmented by terminal subscriptions paid by the cadets themselves varying from about 2s 6d to 10s Every cadet who obtains Certificate A and then takes a commission in the Special Reserve or Territorial Force earns £10 for his contingent

The financial resources of each contingent are not excessive in view of the expense they incur The payment of permanent instructors, improvement to armouries stores and so forth and the purchase of uniform and other equipment not held on charge from the Ordnance Department, runs into a great deal of money The Government provides practically nothing but arms and ammunition The officers are unpaid except when they are at camp or attached to regular units The cadets pay to go to camp generally a sum of 25s or 30s

General Remarks. The establishment of the O T C has undoubtedly raised the efficiency of school corps What is needed, perhaps is a systematic classification of cadets as they pass through the O T C, combined with recommendations by Commanding Officers The policy of the War Office of including, in spite of objections in some quarters, all schools which could maintain the requisite efficiency, even if it seemed unlikely that they could provide more than a handful of officers has been entirely justified in view of the enormous demand which a great war makes The continued efficiency of a contingent depends on the establishment of a tradition, and this can be developed by a C O of character and energy in any school or college where corporate life is strong The training of the officer, apart from camp, especially by frequent staff rides, following on a first course where drill is put in front of everything else, has produced the best results The O T C proved to be pretty nearly what was required to meet the needs of the war, and it is to be hoped that it can be successfully adapted to the changed conditions, social and military, of the present A F

OLYMPIC GAMES —The Olympic Games were the most important of the national festivals of Greece and indeed marked the Greek notation of time Their foundation was ascribed to Zeus himself, and Heracles was supposed to have inaugurated them 1,222 years before our era Be that as it may, they fell at all events into desuetude, and so Iphitus, King of Elis acting on the advice of Lycurgus founded what is generally received as the first Olympiad in 776 B C The country of Elis was suffering dire calamities and the Pythoness of Delphi pronounced that the safety of Greece depended upon the re-establishment of the Olympic Games as the anger of Zeus—to whom they had been dedicated—had been excited by the abandonment of the games initiated by Heracles in his honour The games were thus inaugurated in 776 B C 505 years after the taking of Troy, and twenty four years before the foundation of Rome They were accompanied by a general truce among the warring States, and this fact went far to justify the advice given by the Oracle at Delphi They were held every fourth year, and formed the first authentic notation of time among heathen peoples The Olympic Festival was abolished in the sixteenth year of the Emperor Theodosius, in A D 394

The Festival itself lasted five days, and was held at Olympia in Elis where were situated the celebrated temple of Olympian Zeus the theatre, the hippodrome and the other buildings necessary for the numerous competitions and the enormous crowd of spectators Only free Greeks could compete, and the officials had to be satisfied that each competitor had undergone the prescribed training before he was allowed to take part A victor in the games was considered to confer the greatest honour on the State to which he belonged and had many privileges bestowed upon him The garland of wild olive grown in the sacred grove of the Altis was considered one of the greatest prizes the world had to offer In later times—the times of the degeneracy of Greece—the competitors came to be looked upon not only as professionals, but as nuisances, and for political and other reasons the Emperor Theodosius put an end to the celebration of the Festival

The Modern Cycle of Festivals. Fired by the desire to revive the spirit of peaceful emulation characteristic of the Olympic Games which endured through so many centuries Baron Pierre de Coubertin conceived the idea of resuscitating the Olympic Games on a world-wide basis, and was successful in securing the support of those who could carry it out The modern cycle was inaugurated at Athens in 1896, after an interval of 1,500 years The enterprise proved successful, and the games were held subsequently in Paris in 1900 and in St Louis, U S A, in 1904 The management of the Games was in the hands of an International Olympic Committee composed of delegates from the Olympic Committees of the countries which participated in the games

In 1908 it had been decided that the games should be held in Rome but some unexpected difficulties prevented the Italian Committee from carrying out their intention, and it was suggested that the games should be held in London instead of Rome A British Olympic Council was formed from the Athletic Associations the governing bodies of the various forms of sport in the country, and a programme was drawn up which comprised no less than twenty separate competitions which were approved by the International Olympic Com mittee The rules for each of these competitions were formulated and translated into French and German The number of competitors in each competition was limited an amateur definition for each event was agreed upon and all entries were made through the Olympic Committee of each country The question of professionalism in sport proved as great a difficulty in the modern Olympic Games as it did in those of old The programme included athletics, cycling fencing gymnastics rowing shooting, swimming wrestling skating yacht-racing and all those games which, like football have attained an international status By arrangement with the Franco British Exhibition which took place the same year at Shepherds Bush a stadium was erected with an excellent running and cycling track as well as a swimming pond with a stage for high diving There was accommodation for 80 000 spectators The programme was divided into two parts one for the summer and the other for the winter games The meeting proved a great success More than 2 000 athletes speaking some twenty different languages took part and various entertainments and excursions were arranged for the visitors who were thus able to see something of the country of which they were the guests The object of reviving the Olympic Games was not merely to hold an international athletic meeting on a grand scale but to get the picked youth of the various countries to meet each other in friendly rivalry and in addition to form a common meeting ground of which both winners and losers should carry away none but the happiest recollections At London in 1908 the rules and regulations for the carrying out of the games were systematized for the first time In 1912 the Olympic Games were held at Stockholm where a beautiful stadium was erected, and a most picturesque and successful meeting was held In 1916 the games were to have been celebrated at Berlin for which great preparations had been made extending over a period of six years The war of 1914 put an end to any idea of Olympic Games in 1916 A further series began in 1920 D

ONTARIO, EDUCATION IN —(See CANADA EDUCATION IN)

OPEN-AIR SCHOOLS —Educational progress has been largely due to classification and one of the first steps to be taken in this direction was the segregation of the mentally deficient It was found in Germany that, of the remaining children, from 7 per cent to 10 per cent were neither fit for an ordinary school nor bad enough for a mentally defective school they were mentally backward but not mentally deficient Such children were placed in special classes where the quantity but not the quality, of the instruction was reduced Further, they were given the preference in any hygienic institutions attached to the school, such as baths, dinners or holiday homes While undergoing this special treatment, the backward children were the subject of additional investigation by doctors and educationists and it was discovered that at least half of them were backward not because of defective intelligence but simply through impaired vitality due to incipient disease The backward children were therefore, further classified into backward through slight mental defect and backward through physical defect, it was for the latter class that the Open air Recovery School was initiated

The First Open-air School The first experiment was carried out at Charlottenburg in 1904 A large number of children were about to be transferred from ordinary elementary schools to special backward classes when it was found that they were in a debilitated condition owing to anaemia and incipient disease A new school was therefore established where children could be taught and cured at the same time The doctor arranged for open air conditions careful supervision suitable diet exercise and rest The teacher reduced the classes to twenty-five abandoned some of the memory ballast of the elementary school curriculum and prepared to base his instruction on the concrete so that the every-day surroundings of the child should appeal to his intelligence

A site was selected in a pine forest adjoining an electric car route from the town About £1 100 was spent on temporary wooden buildings and £300 more provided the necessary equipment

Of the 95 children selected 34 suffered from anaemia 38 from scrofulous diseases 14 from heart disease and 21 from pulmonary disease In the first season the school was open for only three months and yet in that time 25 children were com pletely cured while 48 others showed distinct improvement The average increase in weight was about half a pound a week per child and in mental alertness and general cheerfulness there was a marked advance

The results outlined above gave so much satis faction that the accommodation of the school was increased to 120 places for the following year and later to 250 moreover the period during which the school was open was extended to six months in 1905 eight months in 1906 and finally for the whole year

Meanwhile other education authorities established similar schools at Mulhausen Elberfeld, Dortmund and elsewhere

England. In 1907 the Royal Arsenal Co operative Society offered the London County Council the use of its recreation ground at Bostal Wood for an open air school The experiment was carried through in spite of serious drawbacks first, it was the end of July before arrangements for the opening of the school were completed so that the session only lasted thirteen weeks secondly, the site adjoined Plumstead Marshes and lay open to the north only being enclosed on three sides by hills and trees thirdly the summer of 1907 was one of the coldest and wettest of recent years Nevertheless, the improvement in the children was remarkable Three months after the school had been closed, when the scholars had returned to ordinary schools, the head teachers were asked to report on them To quote one which is typical of most " The child's improved physical condition has undoubtedly resulted in improved mental power, to which fact increased pleasure in her work,

and sustained effort in the performance of the same, bear daily witness "

The knowledge gained during a stay in the open-air school may not be great, because of the modifications in the time-table curriculum and methods which are necessary to secure physical improvement As far as education is concerned, the success of an open-air school is not so much in increasing a child's store of information as in developing its power of grappling with new problems It is on returning to an ordinary school with health restored that the open-air scholar will make rapid progress in the acquisition of knowledge

Encouraged by the success of the experiment, the London County Council instituted three open-air schools in 1908 A site was secured high up on Shooter's Hill to take the place of the Bostal Woods School South London was served by the Birley House Open-air School Forest Hill and the Montpelier House Open-air School provided for the needs of North-west London The last did not survive the summer of 1909 as the site was required for building purposes but the other two met with success similar to that of the Charlottenburg Forest School The period of the school session was gradually increased from five months in 1908 to nine months in 1910 and since April 1911, they have been open continuously

London s initiative was quickly followed by Bradford Birmingham and other large towns Impressed by the results obtained in the Metropolis, they have straightway laid out the necessary expenditure on efficient permanent buildings and in this respect have left the first schools far behind

America, and Other Countries The first open air school in the United States was established at Providence Rhode Island in 1908 by 1915 it had been multiplied by ninety-two and there were also thirty open air schools or classes for normal children Open air schools have also been established in Russia Austria Italy France and Holland

Some Features of the Ideal Open-air School.

1 SITE One who has visited most of the existing open-air schools in England on the Continent, and in America has given his opinion that the situation of the Shooter s Hill Open air School is the best It is on the slope of the hill about 350 ft above sea level The site is about 6 acres in extent of which 3½ are woodland and the rest meadow Could the existing clay soil and oaks be replaced by gravel and pine trees then the site would be ideal

2 BUILDINGS The school premises should consist of—

(*a*) An administrative building including kitchen, dining-room bathroom and doctor's room

(*b*) Classrooms these should be entirely independent of each other and in the proportion of one to twenty-five scholars,

(*c*) A resting shed

It should be possible to open a classroom, to its full width, on any or every side and there should be arrangements for heating in very cold weather (See also BUILDINGS, SCHOOL)

3 STAFF An assistant teacher will be required for each class of twenty-five scholars The head teacher should be able to give adequate individual attention to the children of six classes of this size

In addition, there should be a fully-qualified nurse kitchen attendants (one woman for every thirty children) and a caretaker The school doctor should visit at least once a fortnight

4 SCHOLARS These should be carefully chosen on medical grounds alone, and should include the anaemic and poorly nourished, besides those suffering from all forms of tuberculosis (lungs, bones, and glands) in the incipient stage, and mild cases of heart disease

Children suffering from any communicable disease, or with any disease in a severe stage requiring absolute rest or hospital treatment, must be rigorously excluded

It is to be emphasized that the open air school is a *school* and not a convalescent home or sanatorium Healthy activity for both mind and body, without opportunity for dwelling on one's physical condition will go far to remedy bodily defects

The home conditions of the children must be studied, for it is useless to send a poorly-clad and poorly shod child to the open-air school in all weathers returning to an ill ventilated room at night, with insufficient or unsuitable food at week ends The poverty-stricken should be provided for in residential open air schools, leaving the day schools for children from decent homes

5 TIME-TABLE This must provide for meals, a mid-day rest of from one to two hours, personal hygiene recreation, and physical exercise, as well as lessons

The meals should be nourishing, but easily digested Experience shows that three meals per day can be provided at an average cost of one shilling (March 1920) per scholar, excluding the cost of service

The children should have a shower bath daily, and regular opportunities in school time for cleaning their teeth

The physical exercises should include daily breathing exercises for all children, besides special exercises where necessary for spinal curvature

6 CURRICULUM The syllabuses must be considerably lighter than those of ordinary schools, and generally speaking, the work should be along motor and sensory lines Considerable attention should be given to handwork in special subjects, such as gardening and woodwork, as well as in the usual " bookish ' subjects—arithmetic, history, and geography Small classes make this possible and, moreover bodily activity in the open air is everywhere acknowledged as conducive to the restoration of normal health

Up to a certain point, the more modelling, digging, and building there is, the more certain is the success of the school

In conclusion, let us quote Sir George Newman's summary of the open air school ideals " Fresh air, sunshine, food rest, medical and nursing service, personal hygiene study, recreation, comradeship

To weave together these different features in a process of education and a hygienic way of life "

H BROUGHTON

References—

BROUGHTON H *The Open Air School*

OPENING EXERCISES.—A school playground is gradually filling with children, here in singles, there in groups, busy about their own interests, when at a signal all is altered—the individual is lost in the unit of a whole, steady in class-lines, ready for work A great lesson to learn this—to be a useful one of a community !

Some schools have no other place for assembly, yet the right spirit has been grafted on, and traditions are growing in them, nourished by school drill and occasional addresses

Where there are halls it is good to gather the children daily in them immediately after roll-call, so, for a short time, they with their teachers feel part of a living entity, something beyond themselves This feeling is specially present if the school doings are being talked about, sympathy for a sick teacher or class-mate expressed, congratulations given for successes, commendations for the school team or general remarks of approval or censure on conduct made

Orderly marching into the hall, reverent standing at prayers happy singing of selected hymns—if hymn books are available the choice is wider the attention greater—and careful reading of simple, telling passages from the Bible or other books make up an atmosphere that sends all to work with a fuller view of life

Special prayers on stated days are valuable one day a week should be fixed for it and generally there will be something to illustrate brightly parts of the prayer

It is useful to mark one day a year—the schools birthday will have to satisfy most elementary schools, though some of these are fortunate in bearing honoured names of great ones whose birthdays or death days can be used as those of the "Founders' in secondary schools

On these birthdays, the school history can best be retold by a pupil reading his essay on the subject, songs can be sung and recitations breathing the school spirit given while the presentation of a birthday gift to the school will add to the interest

Music gives colour to all these gatherings in the hall, and as no school at least in London need be without a piano let there be music and if the school possesses a string band with children and teachers playing under the leadership of a lover of music other fine factors are brought in to accompany the development of a school spirit

Even in a classroom a strong corporate feeling may develop from a regular five minutes chat about anything that brings the children and teacher on a common ground, for there lies the secret after all, from that the common sympathy arises, becoming the source of the spirit that will make our schools live C T H

OPHTHALMIA NEONATORUM.—(See BLIND, EDUCATION OF THE)

OPORTO, UNIVERSITY OF.—(See PORTUGAL EDUCATIONAL SYSTEM OF)

ORAL HYGIENE—The importance of sound teeth and a healthy mouth in childhood cannot be over estimated Instruction in oral hygiene should, if possible, begin with the parents and with this object it is highly desirable that lectures should be arranged by school authorities dealing with the subject in a simple and concise manner

Parents should also be instructed as to the eruption or "cutting" of the teeth The temporary or "milk" teeth should begin to appear at about the age of seven months, and by two-and-a-half years the milk dentition, comprising twenty teeth, should be complete The preservation of the milk teeth in a healthy state is of great importance, as disease of them will impair the digestion and general health, and their premature loss interferes with the proper development of the jaws, and leads to crowding and misplacement of the permanent teeth The first of the permanent teeth to erupt are four large molar teeth, which appear, one on each side of both jaws, at about 6 years of age, *behind* the last teeth of the temporary set These are known as the "first permanent molars" or "six-year molars" From their size and position in the jaws they are the most important of the entire permanent set and at the same time are more liable to be attacked by decay than any other tooth, hence the necessity for scrupulous cleansing of these teeth, as their loss not only seriously impairs the power of mastication, but permanently interferes with the growth of the jaws and the proper arrangement of the permanent teeth The majority of the remaining permanent teeth erupt between the ages of 7 and 11 years and their eruption should be preceded by the "shedding" of the corresponding temporary teeth At or about 12 years the "second molars should appear immediately posterior to the six-year molars, while the third molars or "wisdom teeth" may appear at any time between the ages of 17 and 25 years

Common Dental Defects. The common dental defects of children may be divided into two main classes—

(1) Those of the teeth themselves,

(2) Defective or abnormal development of the jaws

Decay of the teeth or "dental caries" is the commonest disease of childhood, affecting equally the temporary and permanent teeth Its prevention and treatment will be dealt with subsequently

The commonest manifestation of abnormal growth of the jaws is a narrowing or contraction of one or both dental arches resulting in crowding and irregularity of the teeth Teeth so arranged are specially liable to decay as they favour food lodgment and the effect on the hygiene of the mouth is always unfavourable The condition known as mouth-breathing is frequently associated with abnormal growth of the jaws and is due partly to habit but mainly to some obstruction to the free passage of air through the nose In mouth-breathers, it will be found that the gums in the front of the mouth present a swollen dark red, and unhealthy appearance, while the teeth in the same situation are dirty and often decayed If breathing exercises fail to cure the condition, medical advice should always be sought as the effects are serious not only on the hygiene of the mouth but on the physical and mental development of the child

The most important results of bad teeth in child hood may be summed up as follows—

1 General malnutrition due to imperfect mastication from tenderness of the teeth, and to constant swallowing of poisonous material

2 Enlarged glands in the neck, which may subsequently become the seat of tuberculous infection

3 Injury to the succeeding permanent teeth.

4 Mental deficiency

In a school where dental hygiene is carefully looked after it will be found that the attendance of the pupils is better, and that a higher standard of general efficiency in school-work is maintained

Precautions and Treatment. The duties of those entrusted with the welfare of children from the age of 6 years may be divided into two distinct categories—

1 Instruction in the preservation of the teeth.

2 The obtaining of skilled dental treatment when necessary

The instruction given must be of the simplest

character, and the following are the essential points to impress upon the minds of children—

(*a*) To eat nothing, except perhaps raw fruit, between meals

(*b*) The evil effects of sweet-eating, especially between meals and at bed-time, the same rule applying to biscuits

(*c*) The valuable tooth-cleansing properties of a raw apple

(*d*) That decay of the teeth takes place chiefly during the night that *clean teeth do not decay* hence the importance of regular and thorough brushing of the teeth every night after the last meal and of eating nothing whatever afterwards, so that the teeth are left clean and free from food-particles The tooth-bursh should be small, with stiff bristles, and should be used only by its owner otherwise disease may be conveyed from one mouth to another All surfaces of the teeth should be brushed also the gums the direction of the brushing being from the gums towards the free edge of the teeth A little common salt makes a valuable antiseptic dentifrice its good effect on the gums being especially marked

The principal condition calling for skilled dental treatment will obviously be pain When pain is due to the temporary teeth, extraction is usually the wisest course and in cases of abscess formation extraction becomes an urgent necessity This can be performed by any medical practitioner should the services of a dental surgeon not be available

The benefit to the child's health from the removal of septic teeth far outweighs all other considerations Where the permanent teeth are concerned, conservative measures should be adopted whenever possible, but the treatment in any given case will naturally be decided by the dental surgeon

If skilled attention is not at hand, the pain from a decayed tooth can generally be relieved by a little oil of cloves or strong carbolic acid introduced into the cavity on a small pellet of cotton-wool When the latter remedy is used great care should be taken not to burn the lips or gums

Finally the importance of regular inspection three or four times a year by a qualified dentist cannot be too strongly insisted upon, as the doctrine "prevention is better than cure" applies with especial force to disease of the teeth F R S

ORAL METHOD OF DEAF TEACHING.—(See DEAF-MUTISM AND EDUCATION)

ORAL SYSTEM AND METHOD, THE.—Communication of thought is an essential of social life, and "in the beginning" we have the elements of speech and a potential oral system Drawing and writing come later, bridging difficulties of time and space, the written word remains for distant lands and future generations, where the spoken word has gravest limitations, and, passing from mouth to mouth, tells a tale more or less inaccurate and comparatively short

Teaching is but a specialized form of immediate communication the pupil is present, and the uncertainty and inaccuracy dependent on mental record and recollection should not be in question

The getting of knowledge or skill must be conceived as a growth—an organic process and continuous But the teacher as a "benevolent superintendent" should bring his pupil into right relation with incoming ideas, and shape and select them for best assimilation In other words, he will have to explore the pupil's mental condition and attainment, and accordingly choose in detail what he has to impart and, to some extent, his pedagogic method This preliminary inquiry is not easy when teaching one it is very difficult when teaching many at a time

The preparatory questioning may be (1) *purely Socratic*, in which the pupil comes to realize his ignorance and falls into the proper attitude for instruction—with an alert curiosity (2) *Socratic in form*, in which a further step is taken, and the teacher gauges the stage of advance of the pupil and prepares to lead him forward in the right direction, or (3) *recapitulatory* of early lessons

Questioning is the characteristic of the oral system but is not its sole machinery every device of appeal of language is not only legitimate, but necessary for highest result Yet since the teacher's speech-at length must tend towards the lethargy and inattention of the class, the lesson throughout its course should be broken up by questioning—for purpose of discipline as well as of instruction—and the more as the age of the children is less

As a consistent system, oral teaching will dispense with books as a method it will proceed regularly by question and answer, but with use of every form of direct appeal by "word of mouth."

A E L

ORANGE FREE STATE, EDUCATION IN.—(See SOUTH AFRICA, THE EDUCATIONAL SYSTEM OF)

ORATORIANS—A number of Italian, Spanish, English, and other communities which follow the rule of St Philip Neri The Oratory of St Philip Neri was founded after the Reformation at St Girolamo, Rome, and consisted at first of conferences in which the disciples of Philip Neri gathered to receive spiritual instruction from him He constructed an oratory where the conferences might be held and from this the congregations were named The community obtained in 1575 the church of St Maria in Vallicella, now known as the Chiesa Nuova and there Philip Neri established his congregation of secular priests, living under obedience but bound by no vows Each candidate is admitted by election, between the ages of 18 and 40 and possessed of sufficient income to maintain himself No member is allowed to take any ecclesiastical dignity The objects of the institute are prayer, preaching and the sacraments "Preaching" included four sermons in succession daily, and the discourses were originally intended to rescue the Church from the reproaches levelled at the feebleness and uselessness of the sermons of the day The sermons of the Oratorians were simple familiar discourses, free from the dialectics and rhetorical periods which disfigured those of other preachers The first was an impromptu exposition of a passage which had been read immediately before, the second would be on a text from Holy Scripture, the third on ecclesiastical history, and the last on the lives of the saints Each sermon lasted half an hour, and was terminated by the ringing of a bell The services were accompanied by popular music of a high order which called forth the admiration and praise of foreigners

John Evelyn, in his *Diary* (8th Nov, 1644), speaks of his delight as a boy in the sermon and musical services at the Roman Oratory

"Prayer" included special care in carrying out the liturgical services, and "Sacraments" implied their frequent reception, and their rescue from the prevailing disuse into which they had fallen

In England the Oratory was founded by Cardinal Newman in 1847 After his conversion in 1845 he went to Rome and selected the Oratory of St Philip Neri as best adapted to his future work He returned to England in 1847 and after temporary sojourns at Old Oscott in Staffordshire and in Birmingham established his new community at Edgbaston Here he also founded a still flourishing higher class school for boys In 1849 Newman sent a detachment of his community to found an Oratory in London It was established in King William Street, Strand and was the first public church opened by a Catholic community in the diocese of London Father Faber's preaching for many years attracted large crowds and his writings increased the public interest in his Oratory The community removed in 1854 to its present site in South Kensington and the present church was opened in 1884

ORATORY SCHOOL, EDGBASTON, THE.—(See CATHOLIC [ROMAN] SECONDARY EDUCATION)

ORCHESTRA, THE TRAINING OF A SCHOOL—(See BAND THE TRAINING OF A SCHOOL)

ORDERS, SCHOOL—A term in school financial administration in the United States In thinly populated districts local management of schools is in the hands of school directors and payments of salaries and accounts are made by means of "orders" which are warrants or drafts drawn by the boards of trustees or directors on school funds and passed in the same way as bank cheques

ORGANIC SENSATIONS—If we follow the useful physiological classification of receptors into exteroceptive (vision sound smell—far senses, taste, warmth cold touch, pain—near senses), proprioceptive (articular muscular and the probl ematical "labyrinthine" senses) and interoceptive then the group of sensations commonly called organic would coincide with the last of these The sensations of the sexual system probably depend primarily upon special receptors in the glans penis (Baglioni) and clitoris But they may involve also others more deep seated though that is doubtful Organic sensations then are hunger thirst, nausea and those dependent upon rapid changes of "pos ture" of the bladder and rectum, signalling the need of evacuation, its happening its after effects and the like

As experiences, these sensations show all the distinguishable aspects or attributes possessed by the other more cognitive senses In quality they are most akin to pressures with some admixture of pain Some of them in fact may well be mere pressures distinguishable from those of the superficial and deep-seated cutaneous systems only by their localization outside the latter systems The chief component of hunger seems to be a muscular sensation of strain thirst and nausea are less comparable with any other sense And our consciousness of hunger and thirst certainly involves a habitual awareness of the "intention" or object of these experiences This connection has developed out of the instinctive impulses which these sensations excite in us But the whole question of the composition and analysis of organic sensations from the qualitative side is still rather vague Intensive variations, however, are as obvious as could be desired Organic sensations are usually massive or voluminous—a complex feature which involves both extensity and variety of position Position is the primary difference that underlies difference of localization These sensations are therefore true to the general type, but they do not integrate appreciably to form discrete distances or time-intervals or motions Hence they are of little use for cognition They differ from the other more cognitional senses in being more or less obscure and of merely existential import very powerful in determining instinctive action while present

Considerable discussion has been aroused by the question of the sensitivity of the abdominal organs The conclusion at present seems to be that these organs themselves are not directly sensitive, but only the external or parietal peritoneum which lines the abdominal and pelvic walls and the muscular and serous layers of the diaphragm But there are in the abdominal cavity very many receptors and these seem to reveal some activity in the peculiar process of reflex pain whereby their unfelt excitations produce a hypersensitivity of the skin of the same segment

Organic sensations seem to be of importance in providing a basis for the ego centric aspect of feeling (pleasantness unpleasantness) and for our awareness of the flow of time in general apart from small time intervals up to some three seconds

Allied "sensations" are the feeling of a general lack of water in the body peculiar disturbances due to disordered digestion which seem often to have something rhythmic about them (wheels in the head" "infinity dreams" etc) the feelings of dyspnoea and suffocation and so on H J W

ORGANISTS, THE ROYAL COLLEGE OF—This was founded in 1864 chiefly through the efforts of Mr R D Limpus Its objects were defined as follows (1) To provide a central organization in London for the profession of organist (2) to provide a system of examination and certificates for the better definition and protection of the profession and to secure competent organists for the service of the Church (3) to provide opportunities of intercourse among members of the profession and for the discussion of professional topics, (4) to encourage the composition and study of sacred music

The College was located first in Queen's Square Bloomsbury and after several removals it took over the building in Kensington Gore which had been previously occupied by the Royal College of Music

The College is incorporated under the Companies Acts and is under the patronage of the two archbishops The management is in the hands of a council of twenty-one Fellows of the College and among the holders of offices have been many of the most famous organists of the period since 1864 including Sir Fredk Bridge Sir George Elvey, Sir John Goss Edward Hopkins John Hullah Sir George Macfarren, Sir F A G Ouseley Sir John Stainer and Sir Arthur Sullivan

Examinations The College does not undertake any teaching of students but it holds examinations for the diplomas of Associate (A R C O) and Fellow (F R C O) The examinations are held

twice a year, in January and in July, and all candidates must be members of the College A candidate for membership must be proposed by two members of the College one of whom knows the candidate personally and must be elected by the council The membership subscription is one guinea a year Candidates must become Associates before they are allowed to take the examination for Fellowship

The examination for Associate is in two parts—practical and theoretical—which may be taken at different times Graduates in music may be exempted from the paper work tests and take only the organ work tests Each examination lasts seven days of which one is devoted to paper work and the rest to organ playing The paper work lasts from 10 a m to 6 p m the organ playing for each candidate is a twenty minutes test on one of the organ-playing days

The organ playing tests are as follows To play a portion of a passage selected from a list given in the syllabus issued to candidates to play from a vocal score of four parts without pedals to transpose a hymn tune into a key specified by the examiner to play at sight a passage of organ music in the form of an accompaniment Past examination papers are published at a cheap rate

The Royal College of Organists keeps an Organists Register and publishes an Annual Calendar containing lists of Members Associates and Fellows It also publishes volumes of lectures The College is officially represented by *The Musical World* in which it has since 1887 reported its lectures and general College news

ORGANIZATION (SCHOOL) —Problems of school organization are of two kinds those which may readily be solved by reference to a text book or the various regulations and suggestions issued by the Board of Education and those which challenge the individual judgment of the administrator and teacher and are in point of fact differently solved in different schools It is with the latter kind alone that I propose to deal

The Administrative Authority. Many of the questions that engage the attention of the administrative authority are purely financial The authority aims at providing not the best education it can conceive but the best education it can afford There are however other problems upon which financial considerations have comparatively little bearing Is it better to have a few large schools or many small schools ? Of how many departments should a school consist ? Should the sexes be educated together or separately ?

As for the size of the school or department, it may be stated generally that, as it increases in size the facilities for effective organization improve, but, after an enrolment of about 400 is reached, this advantage is counterbalanced by the increasing difficulty of the head teacher in gaining a personal knowledge of the individual pupils If, in a department where the pupils normally spend x years the number of teachers or classes is less than x, organization is necessarily complicated

The greater the number of departments in a school the less the danger of any particular section of that school being neglected but the greater the impediment to the free flow of promotion When, for instance, an elementary school is organized as Infants Junior Mixed, and Senior Mixed, a concentration of teaching power is secured in an oft-neglected part (Standards I and II), but the advantage is probably lost by the time the child reaches the top of the school—a loss due to the second break in his school career

The *pros* and *cons* of co-education in secondary schools are too perplexing to be dealt with here, but in the elementary school it may safely be said that they are so evenly balanced as to make it of little importance which type is adopted The moral danger may generally be neglected, except in slum neighbourhoods

The Head Teacher (*a*) THE PROBLEM OF THE OLD DULL CHILD The head teacher is responsible for the classification and promotion of his pupils, and for the distribution of teaching power Scholastic proficiency has always been, and probably always will be regarded as the main ground of classification but other considerations—age, in particular—cannot be ignored Indeed, in the infant school, age is the chief determining factor, and in the senior school the question constantly arises What is to be done with the old, dull boy ? Should he be left among his equals in learning, or should he pass up with companions of his own age ? Where there is only one line of progress up the school a choice of two evils is forced on the schoolmaster and the lesser evil is to promote the dull boy a little faster than his book learning alone would warrant By moving on, the boy will do no worse, and he may do better

(*b*) STREAMS OF PROGRESS The problem of the retarded boy is capable of a still better solution However carefully a school is graded, the apparent homogeneity of the class is delusive Even if it be granted that all the members of the class are at a given time on the same level of scholarship, their individual rates of progress are so different that in a month or indeed a week, there is quite a perceptible scatter It is almost invariably found that a few children at the top of the class can if allowed to go at their own pace, get through about three times as much work as those at the bottom In fact, in a graded school of average size three streams of progress are discernible There is the middle stream of children who are able to get through one standard, grade or form and one only, each year These are they whom the syllabus of work comfortably fits But however carefully the feeble minded are drafted to special schools on the one side and whatever provision is made for the transfer by scholarship of brilliant children on the other, there still remain a sluggish current of subnormal children and a rapid current (or the possibilities of a rapid current) of supernormal It is the former, the retarded current, which reveals itself the more obviously , not because it is the more real, but because it is easy for a boy to do less than he can, while it is impossible for him to do more It is the claim of the laggard, therefore, that seems the more urgent in the school When this has been met, the claim of the bright child will no doubt receive the attention it deserves Few schools are large enough to provide, by means of parallel classes, separate lines of progress up the school for these three types of children, but much may be done by means of a few " remove " or special classes The younger dull children might for instance, be taught together in a class on the level of Standard I and the older in a class corresponding to Standards III and IV A special syllabus is, however, desirable, and the children should, when fit, be re-transferred to the ordinary classes

Another means of dealing with the difficulty consists in making terminal or half-yearly promotions, instead of yearly This is gradually gaining vogue

(*c*) ALLOCATION OF STAFF In the secondary school where specialization in teaching is the rule, the difficulty of distributing the staff is not so great as in the elementary school where specialization is exceptional Two systems are in vogue—both open to criticism In one the class master remains in the same standard or form while the class passes on In the other, the class master passes up the school with his class The objection to the former is that it has a deadening effect upon the teacher and to the latter that it fails to distribute the teaching power evenly for the children who have the misfortune to begin with a poor teacher are unless they fall out of step with the class saddled with him all through their school career Apart from the remedy afforded by specialization the wisest course would seem to lie in some such compromise as arranging for each teacher to spend two years at each standard As an objection it is frequently urged that some teachers are better suited for the upper classes and some for the lower That some such limitations often exist cannot be denied but they are rarely sufficient to prevent movement within a range of two or three standards

One of the most perplexing problems in the school is the allocation of the weak teacher for there often is a weak teacher on the staff Which class is he to teach ? He is generally given in the senior school at any rate the lowest class It is thus frequently found that a child passes directly from the best teacher in the infant school to the worst teacher in the senior school—from a bright and stimulating influence to a dull and depressing influence And the earliest stage of his career in the senior school becomes marred by fundamental defects which years of careful teaching sometimes fail entirely to eradicate The difficulty is that although the weak teacher suits this class badly he suits the other classes worse Through narrowness of intellectual outlook or through lack of skill in teaching or as more frequently happens through want of disciplinary power he fails dismally with the upper classes The remedy is hard to find It is partly supplied by specialization However weak a teacher is there is generally some one subject which he can teach better than other subjects and he should be made responsible for that subject in other classes besides his own This would give abler teachers an opportunity of teaching the unfortunate lowest class

Again the custom of employing women teachers for the lower classes in boys schools tends to mitigate the evil For it will be admitted that a stupid woman is less stupid than a stupid man And although there will still be a lowest class for a man to take the child will be older by that time

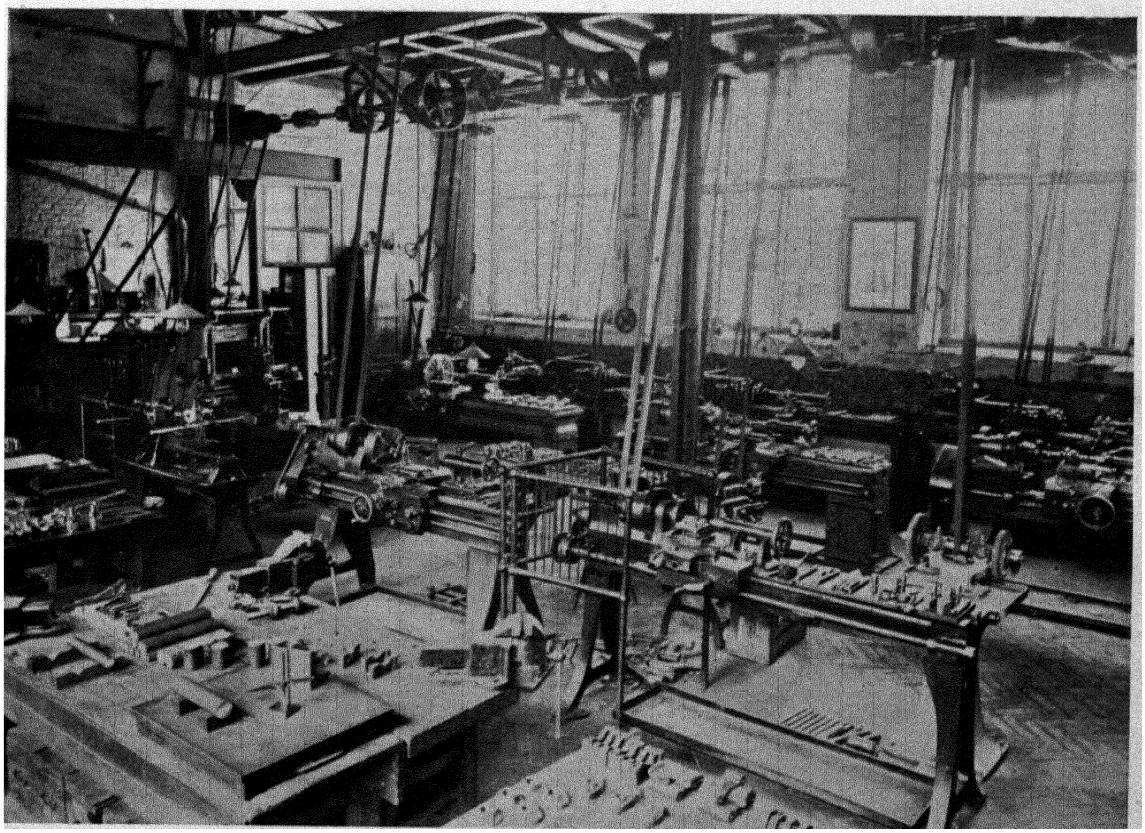
(*d*) SPECIALIZATION Specialization brings its own crop of evils Discipline occasionally suffers the bond between teacher and taught is sometimes weakened and the temporary absence of the specialist seriously disturbs the school routine A prolonged absence generally requires a reconstruction of the time table for it rarely happens that a 'supply' teacher can replace a specialist In spite however of these drawbacks specialization, when wisely adopted and mainly confined to the upper half of the school will probably be found to conduce to intelligence and thoroughness, and to revive fading interests on the part of both teacher and taught

The Class Teacher. It is well to bear in mind that the class is never quite homogeneous that it is a unity for certain purposes only that the possibilities of collective teaching are limited, that, with the newer and freer system of promotion a wider variety of ability and knowledge exists within the class and that those varying aptitudes call for more individual attention than the present system of education provides for In addition to teaching subjects we need to teach the pupils how to study those subjects Not only should lessons be given but pursuits should be cultivated All this points to individualism to some form of organization within the classroom based on individual differences Already a tendency is noticeable in England towards sectional teaching In some lessons the unit is no longer the class but the section in others the unit is the pupil Indeed to adjust the relative claims of collective and individual teaching is one of the biggest tasks that the future holds for us Its complete performance would solve most of the other difficulties of organization already discussed So much impressed have some educators been by the importance of securing the free and full development of individual abilities and of securing it by self effort that they glorify the small ungraded school at the expense of the large graded school But is it not possible to capture both the individualism of the former and the economy of the latter ? However that may be the chief aim of the organizer of a school must be so to distribute the teaching power as to secure for each pupil as far as the exigencies of school life permit the highest cultivation of his individual tastes and aptitudes (See also GOVERNMENT OF SCHOOL IN OTHER THAN COUNTY AREAS THE) P B B

ORIENTAL EDUCATION IN GREAT BRITAIN. —The first impulse to the study of Oriental languages in this country came from a recognition of the requirements of Christian missionaries In 1311 the Council of Vienne decreed that professorships of Arabic Chaldee and Hebrew should be instituted in five universities (of which Oxford was one) in the hope of thereby promoting the conversion of the Jews and the Muhammadans and there is a record of money being collected for the payment of a converted Jew who was teaching Hebrew at Oxford in 1320 But there is little evidence of continuous and organized study of Oriental languages in England during the Middle Ages After the Reformation however with the increased interest in the study of the text of the Bible greater attention began to be paid to the study of Hebrew along with Greek in 1541 that zealous scholar Nicolas Clenard (*q v*) wrote to a friend, *Mundus coepit Graecari et Hebraicari* and in the anonymous treatise on education published in 1555, entitled *Institution of a Gentleman* Hebrew is included in the scheme of education that every gentleman should follow It was not only felt that this language should form a part of the studies of the theological student in the universities but it was included in the curriculum of a large number of schools (*v* Prof Foster Watson, *The English Grammar Schools to* 1660 pp 525–529) The teaching of Hebrew grammar was enjoined in the Statutes of Westminster School (middle of sixteenth century) and in the Grammar School of Aberdeen (1553), and was introduced into an



Oundle School, Laxton, and Crosby Houses



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Oundle School—The Workshops

increasing number of schools during the sixteenth and seventeenth centuries, it held its place in the scheme of studies until in the nineteenth century it was thrust out by the pressure of new subjects (Merchant Taylors' School is one of the few schools in which Hebrew is still taught) Occasionally in the seventeenth century some other Oriental language was also taught by a particularly learned head master (*e g* in Westminster School Dr Busby taught some of his scholars Arabic) and John Postlethwayt, who became high master of St Paul s School in 1697 taught Arabic and Chaldee as well as Hebrew, and one of his pre decessors had taught Arabic It might have been expected that a brilliant group of Orientalists would certainly be found in the universities of the seventeenth century seeing that Hebrew was taught in at least twelve grammar schools in England but, apart from a few individuals the level of Oriental scholarship appears to have been low The Regius Professorship of Hebrew had been endowed at Oxford in 1535 and at Cambridge in 1540 The Professorship of Arabic at Cambridge was founded in 1632 by Sir Thomas Adams a wealthy draper of London who was afterwards Master of his Company and Lord Mayor At Oxford Archbishop Laud augmented the endow ment of the Chair of Hebrew and founded the Professorship of Arabic which bears his name the first occupant of the latter chair being the learned Edward Pococke (1604–1691) Further provision was made for the study of Arabic (as also of Turkish) by King William III in 1699 in view of the diffi culties that had been experienced in obtaining the service of experts to transact correspondence with the Sultan of Turkey and the Dey of Algiers and from 1714 the endowment has been continued in payment of the stipends of the Lord Almoner's Professors of Arabic at Oxford and Cambridge (*v The Athenaeum* 16th Nov 1889 pp 673–674) In the Scottish universities though Hebrew had been taught since the Reformation it does not appear that permanent chairs were founded until the seventeenth century a professorship of Hebrew and Oriental Languages at Edinburgh in 1642 and one of Hebrew in the same year at Marischal College Aberdeen in 1673 a chair of Oriental Languages in King s College Aberdeen at Glasgow—though the Commissioners of Visitation appointed by Parliament in 1664 had recommended the study of Hebrew together with some Chaldee and Syriac —no chair of Oriental Languages appears to have been instituted until 1709 these professorships were attached to the Theological Faculty and the teaching appears to have been mainly elementary of Edinburgh, Sir Alexander Grant says that up to the middle of the eighteenth century hardly an efficient professor occupied the chair of Hebrew (*Story of the University of Edinburgh* Vol II p 289)

Sanskrit, Pali, and Malay A fresh impulse was given to Oriental studies in the early part of the nineteenth century by the interest excited in Sanskrit through the writings of Sir William Jones Sir Charles Wilkins Colebrooke etc and the recognition of the importance of this language for the philology of Greek and Latin and other European languages The study of Sanskrit by Englishmen was, at the outset, confined to servants of the East India Company The first Boden Professor of Sanskrit at Oxford was not appointed until 1832, the chair having been endowed by a Colonel Boden of the East India Company s service, who, in his will, expressed the opinion "that a more general and critical knowledge of the language will be the means of enabling my countrymen to proceed in the conversion of the natives of India to the Christian religion by disseminating a knowledge of the sacred Scriptures among them ', and a chair of Sanskrit was founded at Edinburgh by Dr John Muir in 1862 and one at Cambridge in 1867, more recently Sanskrit has been made part of the teaching in Trinity College Dublin and University College, London In 1869 Robert Childers laid the foundation of Pali studies by the publication of the first Pali text printed in England and, in 1873 was appointed Professor of Pali and Buddhist Literature at University College London

The study of Malay was introduced into this country by a servant of the East India Company, William Marsden (1754–1836) who acquired a knowledge of this language in Sumatra during the eight years (1771–1779) he spent in the Company's service, he presented his collection of Oriental books and MSS to King s College London in 1835, but little has been done for the study of this language since

Hindustani and Indian Vernaculars The needs of the East India Company which required of its civil and military officers a sufficient knowledge of Indian languages for the conduct of the affairs of the Company led to a certain amount of encouragement being given to other languages besides Sanskrit written or spoken in India In their Military College Addiscombe provision was made for the teaching of Hindustani from 1809 to 1861, and of Sanskrit Arabic Persian Hindi Hindustani, Bengali Marathi and Telugu from 1809 to 1857 in the East India College at Haileybury which the Company founded for the training of its civil servants As Persian was the official language in India up to 1837 many of the Company's servants acquired a considerable knowledge of it and to such scholars we owe the finest of the great collections of Persian MSS in the libraries of this country

But for daily use a knowledge of the Hindustani language—the *lingua franca* of India—was of more importance and in the Company s Colleges at Haileybury and Addiscombe there was a succession of able scholars beginning with John Shakspeare (1774–1860) who laid the foundation of Hindustani studies by the compiling of dictionaries and grammars of that language that had a large sale (G Dugat *Histoire des Orientalistes* II pp 262–263) About the same time that eccentric scholar John Gilchrist (1759–1841) founded in 1818 the Oriental Institution in London under the patronage of the East India Company chiefly for the teaching of Hindustani to its medical officers this institution came to an end soon after 1826 but the teaching of Hindustani was continued in London by Duncan Forbes (1798–1868) who had become Gilchrist's assistant on his return from Calcutta in 1826, and was appointed Professor of Oriental Languages in King s College in 1837 Provision was made for the teaching of some of the other vernaculars of India, besides Hindustani in University College and King s College London from 1826 and 1861 respectively, but since 1889 when an attempt was made to found a School of Modern Oriental Studies in connection with the Imperial Institute, an arrangement was made according to which, at University College, were taught the languages required by candidates for the Indian Civil Service, namely, Sanskrit Bengali, Hindi, Hindustani,

Marathi Gujarati Tamil Telugu Burmese Arabic and Persian while King's College provided instruction in languages other than those of India with special reference to the requirements of commercial students and those who desired to acquire a colloquial facility in these languages namely Chinese Japanese Malay Turkish Swahili and modern Arabic and Persian The Universities of Oxford and Cambridge University College London and Trinity College Dublin receive small grants (first sanctioned in 1890) for the teaching of the more important Indian vernaculars to the accepted candidates for the Indian Civil Service

Chinese In 1825 Dr Robert Morrison a distinguished Chinese scholar who had been a missionary in China for seventeen years persuaded a number of gentlemen interested in missions to found a Language Institution in the City of London the languages taught there were Chinese Sanskrit and Bengali but the Institution was short lived and came to an end in 1828 A chair of Chinese was instituted in University College in 1836 but was discontinued in accordance with arrangements made in 1888 with King's College which has had a small permanent endowment for a Professorship of Chinese since 1845 More recently chairs of Chinese have also been founded at Oxford Cambridge and Manchester In 1900 the China Association founded a School of Practical Chinese which four years later was amalgamated with the teaching of Chinese in King's College where it has been carried on with considerable success The London Chamber of Commerce also organized classes in Chinese from 1901 to 1903 the teaching was then transferred to the City of London College in which Arabic Persian and Hausa have also been taught

The Teaching of Oriental Languages in Great Britain The facilities available to the student of Oriental languages at the present time may be briefly summed up as follows In most of the universities of the United Kingdom there is a professorship of Hebrew and generally some other Semitic language is taught as well (*e g* Syriac Aramaic and Arabic) Oxford has a Professor and Cambridge a Reader of Assyriology and London a Professor of Assyrian and Babylonian Archaeology Sanskrit and the more important of the living Indian languages are taught at Oxford Cambridge London and Dublin Sanskrit is also taught at Edinburgh Aberystwyth and Bristol London is the only university that has had a chair of Pali In the universities in which the Indian vernaculars are taught there is also a Professor or Lecturer in Persian but Oxford is the only university that has had a Professor of Zend while Manchester has a Lecturer on Iranian Languages and Literature Turkish is taught in the Universities of Cambridge and London There are Professors of Chinese at Oxford Cambridge London and Manchester and a Reader at Liverpool There are Readers in Egyptology at Manchester and Oxford and a Professor of Egyptology as well as a Lecturer in Coptic at University College London Provision is made for the teaching of Japanese only in the universities of Bristol and London and the latter is the only university that has a Reader in Tibetan and a Lecturer in African languages (such as Hausa Swahili and Zulu) In some of the missionary colleges also such as St Augustine's Canterbury and St John's Hall Highbury provision is made for the teaching of Oriental languages However of these university posts (according to Prof Rhys Davids computation *op cit* pp 184–185) apart from the teaching of Hebrew only six deserve the name of professorships as implying a suitable maintenance for the occupant of the chair while eleven are titular professorships only insufficiently endowed and carrying merely a nominal salary 'We have therefore (he says) the amazing absurdity of men appointed as professors and yet compelled by the arrangements made to spend daily the best hours of the day not in the work of their chairs but in earning their living as clerks or secretaries librarians or journalists

The condition is even worse of those teachers of Oriental languages attached to the various private schools of languages in the metropolis

But apart from professional teachers Orientalism in this country has owed much to the labours of scholars who have pursued their studies unconnected with any academic institutions especially Indian officials (both under the East India Company and the Crown) missionaries and persons of independent fortune among these (omitting the names of living scholars) mention may be made of Thomas Young (1773–1829) who first deciphered the Rosetta stone Edward Hincks (1792–1866) George Smith (1840–1876) and Sir Henry Rawlinson (1810–1895) the Assyriologists (the first of these was also one of the first Egyptologists) Sir William Muir (1819 1905) and Thomas Chenery (1826–1884) as students of Arabic Sir Gore Ouseley (1770–1844) and H Bicknell (1830–1875)—the translator of Hafiz—among Persian scholars E J W Gibb (1856 1901) the Turkish scholar in whose memory was founded the Gibb Memorial Fund for the publication of Arabic Persian and Turkish texts Of considerable importance also was the founding of the Royal Asiatic Society (in 1823) with which in 1837 was amalgamated the Oriental Translation Fund (this Fund was established in 1828 it ceased in 1878 but was revived in 1896)

Surprise has often been expressed at the fact that England in spite of its great political and commercial interests in the East has done less than other European nations—such as France Germany Holland or Russia—for the encouragement and promotion of the study of Oriental languages Sir Charles Eliot in 1908 emphasized what had been urged repeatedly by statesmen and scholars in the following words Clearly it is the interest as well as the duty of an Imperial nation that it should be thoroughly familiar with the customs and thoughts of the races which it governs and in India this knowledge if not dependent on Sanskrit and Arabic scholarship is at least closely connected with the study of Indian languages and religions The value of such pursuits to the Government is not to be measured by the literary output but by the qualities they tend to develop particularly if like all true studies they are lifelong Those who have such interests will by their own inclinations be led to learn more of native languages than examinations require and to gain a sympathetic understanding of Indian life and thought I am convinced that whether Europeans have to deal with highly civilized Asiatics such as Hindus and Chinese or with Africans the best key to their regard and affection is a proper knowledge of their language I am sure that even savages and, still more civilized Asiatics appreciate the compliment and friendly interest implied in an attempt to learn their language thoroughly and if to a

knowledge of the language can be added an acquaintance with the literature which they respect then the effect is proportionately greater '

Similar considerations may well be urged in regard to commercial men and members of the Diplomatic Service The School of Oriental Studies which has been established in London is intended to supply the need of a well equipped and adequately endowed central institution in the capital of the British Empire For details of the School see the following article ' T W A

ORIENTAL LANGUAGES, THE STUDY OF — Ever since the literature of the East first became popularized in Europe a sort of mystery and feeling of inaccessibility has attached to the languages in which those literatures are preserved

The acquirement of these languages was considered to be outside the scope of ordinary scholarly attainment and to be merely a serious hobby of a small band of specialists The experts in these languages were of two kinds one the residents in the East and the other rare scholars in the West whose researches were mainly confined to dead languages

It is the absence of proper incentives that accounts mainly for the dearth among Englishmen of students of Oriental languages—for no prospect of a livelihood could reasonably be held out to anyone taking up these subjects in the past Positions commanding a suitable maintenance in the various universities in England did not number in the British Isles a dozen all told and the encouragement of language study in the Civil Service and in the Army has never been sufficient to arouse general enthusiasm It is especially this want of practical encouragement that has so long delayed the establishment in this country of a School of Oriental Studies For a description of the facilities which existed for such studies prior to the foundation of the London School we must refer to the article on Oriental Education in Great Britain

The question of the establishment of a School of Oriental Studies in London was first seriously recommended by the Royal Asiatic Society to the Senate of the University of London in 1905 The idea was not then a new one and a similar institution had been discussed at intervals for the past fifty years

Weighty arguments were repeatedly brought forward regarding the national importance to England of a study of Oriental Languages in consideration of her Eastern Empire the neglect of these studies by the British Government as contrasted with the encouragement given to them by Continental Governments less intimately concerned than ourselves with the East the importance for commercial and diplomatic purposes of a competent knowledge of Oriental languages the inefficiency of civil and military officers serving in the East as a result of their ignorance and the frequent misunderstandings that arise from the same reason the need of knowledge of the language and literature of Eastern races for intelligent and sympathetic relations with them

How little public response this movement met with at the outset is proved by the fact that the School of Oriental Studies did not actually come into existence until 1916

School of Oriental Studies The school was established by Royal Charter in June 1916 Its purposes (as set out in the Charter) are ' to be a school of Oriental Studies in the University of London to give instruction in the languages of Eastern and African peoples Ancient and Modern, and in the Literature History Religion and Customs of those peoples especially with a view to the needs of persons about to proceed to the East or to Africa for the pursuit of study and research commerce or a profession and to do all or any of such other things as the Governing Body of the School consider conducive or incidental thereto having regard to the provision for those purposes which already exist elsewhere and in particular to the co ordination of the work of the school with that of similar institutions both in this country and in our Eastern and African Dominions and with the work of the University of London and its other schools

The school has been created as the outcome of the reports of two Government Committees the first a Treasury Departmental Committee presided over by Lord Reay the second an India Office Departmental Committee presided over by Lord Cromer The school is intended to provide London with a centre for Oriental teaching adequate to the needs of the Metropolis and of the Empire and one that will remove the reproach that London has hitherto been without an Oriental school comparable to those of Paris Berlin and Petrograd

Lord Reay's committee recommended that the school should be built up from the nucleus of Oriental teaching now existing at University and King's Colleges Oriental teaching has for many years been carried on at the two colleges both of which have been now incorporated in the University of London and though the teaching was on a restricted scale many distinguished Orientalists took part in it The Senate of the University of London having assented to the arrangement nearly the whole of the staffs of the Oriental departments of the colleges excluding certain subjects such as Egyptology Assyriology and Hebrew were transferred to the school as from 1st January 1917

Courses The school of Oriental Studies London Institution which has been recognized by the University of London now offers instruction in upwards of forty languages of Asia and Africa and employs about forty lecturers In a considerable proportion of the spoken languages instruction is given by teachers belonging to the countries where the languages in question are spoken as it is the aim of the school to provide as far as possible both European and Oriental lecturers in the principal languages included in the curriculum

Lectures on the history religions and customs of Oriental and African countries form a special feature in the teaching of the school Courses are also provided in Indian Law and the History of India and arrangements are made from time to time for special courses of lectures to be given by distinguished Orientalists not on the staff of the school

Inter collegiate arrangements have been made with University College for instruction in Phonetics modern phonetic methods being used to facilitate the acquirement of correct pronunciation Inter-collegiate arrangements have also been made with the London School of Economics for instruction in Sociology and Anthropology

The school is administered by the Director, who is an Orientalist under the Governing Body, on which

are represented the Crown, four Secretaries of State, the University of London, the Corporation of the City of London, the County Council, the British Academy, the Royal Asiatic Society, and the London Chamber of Commerce

The principal subjects taught are Arabic, Armenian Assamese Bantu languages Bengali, Burmese, Chinese, Ethiopic Georgian, Gujarati, Hausa, Hindustani and Hindi History of India, Indian Law, Japanese, Kaffir, Kanarese Karanga, Luganda, Malay, Malayalam Marathi, Melanesian Nyanja, Palaeography Pali Persian, Phonetics Polynesian, Punjabi Sanskrit, Sesuto, Sechuana Shan, Siamese, Sinhalese Swahili Tamil, Telugu Tibetan Turkish Yoruba, and Zulu

Examinations The examinations for the first and second year certificates are held annually and the Diploma examination as required for advanced students At the time of writing only two funds exist for the award of scholarships in Oriental languages namely, the Gilchrist scholarships for Turkish and Chinese, and the Ouseley Memorial scholarships for Arabic, Persian and Hindi

The London School provides not only for the practical teaching of living Oriental languages but also for advanced instruction and research in the classical languages of Asia and Africa and includes preparation for degrees in the University of London

Students. As a general rule students fall under one of two categories namely, (1) those who preparing to take up residence in the East wish to acquire as much of the language spoken in the country of their destination as is possible in a short time, and (2) students who wish to make a serious study of a particular language and cognate subjects

For the former category the ideal system is an intensive course during which the student devotes his whole time to his subject and attends as many classes as he feels he can benefit by With such a system, the student may obtain in six months a far better knowledge of a language than he could hope to get in three years by attending three or four lectures a week, and engaging simultaneously in other studies or avocations

For those who fall under the second category such a system is not to be recommended and with proper guidance as to his reading and with constant help from his teacher quite a small number of lectures per week should suffice

It is by no means universally recognized that a beginning of all Eastern languages can best be made at home This is of course self evident in the case of travellers but it also applies to those who intend to reside in an Eastern country For, apart from considerations of climate which in most Oriental countries tend at the outset to reduce the energies, it is certainly the case that during the first year or so of residence in a totally strange country, a man's time is fully occupied in learning his new duties and in adapting himself to unwonted surroundings Such are not the conditions in which to embark on the acquisition of a new language On the other hand, if the newcomer arrives with a definite linguistic stock-in-trade if he has mastered the alphabet the rudiments of grammar and even a limited vocabulary of the language spoken in the country of his adoption, he is not only able to adapt himself more readily to the new conditions but also to profit in a far greater measure by the language teaching which may be available locally, than one arriving without such equipment

The Rise and Development of Oriental Studies in France. In connection with the establishment of the London School it may be of interest to trace briefly the rise and development of Oriental studies in France.

Under the old régime, the Collège de France has from the first had three chairs all connected with theological studies namely, Hebrew Arabic and Syriac

In 1795 the Convention opened as a sort of annexe to the Collège de France l'École des Langues Orientales vivantes, with the special idea of training interpreters The theoretical and practical study of Oriental languages was thus at a very early stage put into separate compartments and the differentiation did not stop here

In the course of the nineteenth century various new institutions were opened in Paris some for the practical and others for the theoretical side so that far from discouraging the study of Oriental languages, a good deal of overlapping and reduplication was entailed, and by the end of the century there existed not less than six institutions at which these languages could be studied from various points of view

The most important of these are l'École des Langues Orientales vivantes where practical courses are given in eighteen languages, and the Collège de France, which possesses nine chairs in Oriental languages In addition to the various institutions in France there exists a very important school in Hanoi called l'École de l'Extreme Orient which has done most valuable work

English and French Systems The establishment in London of a School of Oriental Studies has brought about exactly the opposite result to that which has been produced in France first by the distinguishing between theoretical and practical teaching of languages and secondly by the multiplication of institutions The object of the London School is to provide anyone at the same institution with both varieties of instruction, and this obviously has great advantages, if only from the standpoint of time-saving

In Paris a student who desires to learn not only how to speak and write Arabic, but also to read the Classics and to obtain an insight into Mohammedan history and literature is obliged to traverse perhaps twice in a day the whole length of the Boulevard St Germain and thereby lose much time with the possible eventuality of being unable to fit in the courses delivered in two or three different institutions, which draw up their time-tables in the spirit of isolated independence

In the London School it is now possible, for instance to obtain in one building instruction in spoken Arabic, courses in classical Arabic, and lectures on Mohammedan history and religion and the geography of Mohammedan countries

Foreign Institutions. The principal institutions outside the British Empire at which Oriental languages may be studied are the following—

AUSTRIA *Vienna*—

1 University of Vienna Philosophical Faculty
2 Imperial and Royal Consular Academy
3 Imperial and Royal Public Institute for Oriental Languages

HUNGARY *Budapest*—

4 University of Budapest Philosophical Faculty
5 Oriental Commercial Academy

FRANCE AND FRENCH COLONIES. *Paris*—
6 University of Paris Faculty of Laws.
7 University of Paris Faculty of Letters.
8. Collège de France
9 École Speciale des Langues Orientales Vivantes
10 École Pratique des Hautes Études Section des Sciences Historiques et Philologiques
11 École Pratique des Hautes Études Section des Sciences Religieuses
12 École Libre des Sciences Politiques
13 École Coloniale
14 École du Louvre
Algiers—
15 École Superieure de Droit, and École Superieure des Lettres
16 École Francaise d Extrême Orient
GERMANY *Berlin*—
17 University of Berlin Philosophical Faculty
18 University of Berlin Seminar for Oriental Languages
HOLLAND *Leyden*—
19 University of Leyden
The Hague—
20 Netherlands Indian Academy
ITALY *Rome*—
21 University of Rome Faculty of Philosophy and Letters
22 College of Propaganda
Naples—
23 University of Naples Faculty of Philosophy and Letters
24 Royal Oriental Institute
RUSSIA AND SIBERIA *Petrograd*—
25 University of Petrograd Faculty of History and Philology
26 University of Petrograd Faculty of Oriental Languages
27 Educational Section of Oriental Languages, attached to the First Department of the Ministry of Foreign Affairs
Moscow—
28 University of Moscow Faculty of History and Philology
29 Lazareff Institute of Oriental Languages
Vladivostok—
30 Oriental Institute E D R

ORIENTAL STUDIES, THE SCHOOL OF.—(See ORIENTAL LANGUAGES, THE STUDY OF)

ORIGEN (185–253) —He was one of the most learned of the early Christian fathers, and a voluminous writer He was a native of Alexandria, and after being trained in the catechetical school under Clement, he became master there, teaching for twenty eight years, and writing religious treatises and works of criticism In 232 being deprived of his office and forbidden to teach in Alexandria he settled in Palestine and founded a school at Caesarea in which he taught literature, philosophy and theology until his death.

ORPHAN SCHOOLS.—The provision for the maintenance of destitute orphans includes a large number of institutions, some of which are voluntary homes some are reformatory and industrial schools and others are provided by the charitable part of the work of societies and associations Many of the voluntary homes are certified under the Education and Maintenance of Pauper Children Act (1862–1863), and are thus under Government inspection, and made available for the reception of selected cases that may be sent from the workhouses by the guardians, who contribute about two-thirds of the cost of the children's maintenance Some are under the Board of Education as recognized elementary schools, are duly inspected, and receive the usual Government grant, others are inspected by the Council of the Inspection of Homes Association but many are under no independent examination or inspection whatever Under the Act referred to above, the Secretary of State may cause any institution for the reception of poor children to be visited and inspected from time to time by persons appointed by him

Particulars of many institutions of various types are given in *The Annual Charities Register*, published by the Charity Organization Society

ORPHANAGES FOR THE CHILDREN OF TEACHERS.—(See BENEVOLENT AND ORPHAN FUND OF THE N U T)

ORTHOPAEDICS IN RELATION TO SCHOOL CHILDREN —The term "orthopaedy" was invented by Nicolas Andry dean of the faculty of medicine in the Royal College in Paris His book, *L Orthopédie ou l art de prévenir et de corriger dans les enfants les difformités du corps* was published in 1741 Andry explains the meaning of the term thus 'As to the term in question I have formed it of two Greek words to wit *ὀρθός* which means straight upright or free from deformity and *παιδίον* which means a child Andry s work would serve to-day as a sound guide for the physical care of school children Even healthy children may become deformed by neglect of the principles he taught Thus he insisted on proper seats and desks being used when children are learning to write, and on calisthenic exercises suitable to encourage the normal growth of muscles and bones

Anatomical Considerations Postural or static deformities are caused even in healthy children by faulty conditions in schools Certain anatomical features are to be kept in mind The thirty three bones which constitute the spinal column and the bones of the limbs are composed during their period of growth not exclusively of bony substance, but contain thin layers of cartilage or gristle These are placed close to the upper and lower surfaces of the bodies of the vertebrae and near the ends of the long bones where these articulate with other bones These layers of gristle or epiphyseal cartilages are the source of nearly all the longitudinal growth of the bones which possess them and, being of a yielding consistency their proliferative power is adversely affected by long-continued pressure The front portions of the ribs remain cartilaginous through life The spine and the chest, the lower limbs, and the feet are the parts most commonly affected by deformities that arise during school life

The spinal column—convex forwards in the neck, backwards in the chest, and forwards in the loins—is mobile in its upper or greater portion, extending from the skull to the pelvis, and is pyramidal in form, widening from its upper end to the sacrum, its pelvic part The sacrum, with the rudimentary coccyx forms an inverted pyramid

The bones of the chest, the ribs, and the sternum share in deformities of the thoracic part of the spine, and are sometimes primarily deformed, *e.g* in pigeon-breast, caused by rickets or by adenoids

Of the spinal deformities, kyphosis or "stopping" lordosis or hollow-back, and scoliosis or lateral curvature are the named varieties

The parts of the thigh bone, or of the chief bone of the leg, the tibia that are most apt to be affected by bad school conditions are those that adjoin the knee-joint in the deformity known as knock-knee

The bones of the feet are the tarsus metatarsus, and the bones of the toes, or phalanges The tarsus and metatarsus when the two feet are placed together, form an elongated vault wider in front than behind with its highest points at the two bones (astragali) that fit into the tenon like space formed by the two leg bones at the ankle Each foot is thus arched both longitudinally and transversely

The normal curves of the spine and the arches of the foot are but little developed up to the age of 2 years, after this age they increase progressively to the age of puberty These arches are maintained passively by ligaments and actively by the muscles the tendons of which are attached to various parts of the bones The healthy tone and action of muscles are the chief factors that maintain the parts of the skeleton in their proper relationship

In the common form of flat foot, a longitudinal sinking the foot is everted and in extreme cases the head of the astragalus presses on the ground Transverse flat foot is commoner in adults than in children

It is not only in cartilage containing bones that deformity can arise by abnormal physical conditions Thus obstruction to normal breathing through the nose causes deformity of the bones of the palate and jaws as well as of those of the chest

Stages of a Postural Deformity Any posture that is assumed too often or persisted in too long is apt to become fixed constituting a deformity For instance a lateral bending which necessarily involves torsion of the vertebrae assumed day after day, becomes permanent, showing first as elevation of one shoulder or prominence of one hip In the early stages this deformity can be corrected by voluntary effort later if the cause is not removed it ceases to be under control of the will—the muscle sense being affected the subject loses the consciousness of physical uprightness At this stage the deformity can be corrected by manual pressure In the last stage the form of the muscles and ligaments that hold the separate bones of the spine together and even of the bones themselves becomes altered and the deformity is permanent

Knock-knee and Flat-foot These may be considered together They are apt to be caused by the same posture that in which the knees are straight and the feet wide apart It is one assumed when a child has to stand for long periods with tired muscles the "London apprentice's posture it used to be named In this posture the transmitted weight of the body passes inside the middle of the knee and ankle joints the strain being thrown on the ligaments at the inner sides of knee ankle, and foot and the corresponding parts of the bones both knee and foot give inwards Stages of deformity comparable to those mentioned above in lateral curvature of the spine are observed in knock knee and flat-foot (See EQUIPMENT SCHOOL, and MEDICAL INSPECTION OF SCHOOL CHILDREN) J J C

OSBORNE, ROYAL NAVAL COLLEGE.—(See NAVAL COLLEGES, ROYAL)

OSIER-WORK. — (See BASKET-WORK, THE TEACHING OF)

OTAGO UNIVERSITY.—(See NEW ZEALAND, EDUCATION IN)

OUNDLE SCHOOL—The Grocers' Company manage and maintain Oundle School, which was founded by Sir William Laxton in the year 1556 Oundle is an ancient and pleasant little town of Northamptonshire situated on the River Nen not far from Peterborough The school buildings are modern spacious and convenient and the playing-fields cover 30 acres There are about 500 boys in the school There are four "sides —classical modern science and engineering The first includes classics and mathematics up to the standard of university scholarships The second makes a great feature of languages and has recently added Russian to its time-table it has an Army division and a Navy class and prepares for all the usual examinations preliminary to professional careers and the Civil Service, considerable attention is paid to elementary commercial teaching especially in such often neglected subjects as handwriting and *précis* The Science Side possesses well equipped laboratories and the workshops and laboratories of the Engineering Side are remarkably complete and useful There are twenty four entrance and internal scholarships of £30–70 and four leaving exhibitions of £50

OVER-PRESSURE—A term used somewhat loosely to indicate certain symptoms and signs occurring in school children and others and commonly attributed to an excess of brain work In children, this condition is almost always due to various factors of which the actual school work is seldom the most important Over pressure from brain work alone is in fact rarely met with amongst elementary school children As a general rule the preparation of lessons is done in school hours and the conditions obtaining in the past under which a young child had several hours of homework after a more or less fatiguing school day are gone Cases of genuine over pressure however occur among older students who have to undergo an examination or series of examinations and crop up as rarities among mentally precocious and neurotic children found in standards considerably higher than their ages would warrant In the case of older students the hours properly devoted to sleep and exercise have been encroached upon and certain warning signs are noticeable

Symptoms Headache disturbed and unrefreshing sleep restlessness want of energy and especially want of power of sustained effort and impaired power of concentration when the sufferer finds that he is reading mechanically and without retention—are all significant This weakness of concentration is at first conscious and can be overcome by will power but if the pressure is kept up it becomes almost if not quite unconscious

With these symptoms there is a general loss of retentive power which at first is successfully corrected by repeating the impressions but cannot later be obviated in this manner In aggravated cases confusion of thought, and inability to produce on demand impressions originally quite satisfactorily registered result in a painful state of mind which tends to emotionalism and depression Pallor loss of weight and loss of muscular tone are also noted

The appetite is poor and constipation is usually present The prosecution of study, when headache, blurring of vision mechanical reading, and want of concentration make their appearance, is moreover unprofitable as under such circumstances the impressions stored up, even if correct, cannot be relied upon for use when required Books should be put aside when such symptoms appear While it is possible to continue work longer by varying the actual mental processes, such variation does not give time for the recovery of the brain cells which have become affected and physical exercise of a strenuous character, by producing general exhaustion tends to aggravate the condition

Causes In the ordinary public school child, over pressure as previously stated usually indicates a condition resulting from a variety of causes The amount of mental activity which is quite within the endurance of a healthy child with good environment without producing undue fatigue will be much too great for others not so situated The absence of a child from school on account of illness is often unduly curtailed with the result that studies are resumed during the period of convalescence before the resulting debility has been got rid of Many children are badly nourished —a term not synonymous with "under fed" The period of sleep required for young children is much greater than is usually allowed and in many poor-class children it is quite inadequate for the proper recovery of the brain cells In such homes the child is frequently kept awake till a late hour and disturbed early in the morning In poor class neighbourhoods the child is frequently subjected to undue and oft repeated excitement and to these evils is added the fact that on account of overcrowding or insufficient ventilation the air breathed during sleep is very impure Many children also are found at school suffering from disease or defect which renders them incapable of undertaking the mental work required without undue strain or fatigue In school children perhaps the most noticeable indications of mental fatigue are restlessness or 'fidgets' and inattention and at a later stage headaches languor and nervousness Variation in readiness of response and in general mental ability with emotional instability follow and later still slow response and decreased power of concentration Occasionally the minor immoralities of school children may be traced to chronic brain fatigue

In actual experience it has been found that in girls homework and the incidence of puberty and, in boys work of various kinds before and after school hours have been factors Anaemia is usually present and precocity and the neurotic temperament are predisposing causes

Remedies It is difficult to suggest a remedy for a condition to which there are so many contributory causes the removal of which is a social rather than an educational problem

With the advent of medical inspection of schools, however together with the close co-operation between the sanitary and educational authorities, and the recent marked development in connection with infant care and home visitation there are many forces tending to minimize the causes of the condition commonly termed over-pressure They have as a matter of fact, already appreciably reduced them

Schools classrooms and furniture are steadily improving lessons are shorter and their variety is greater, and, with smaller classes more individual attention can be given to the child At the same time, the classification of children by age no longer holds good, and the tendency to get children to return to school after minimum periods of exclusion for disease, and to secure their attendance unless seriously ill, has been checked Disease and defects which throw extra strain on a child during school hours or render it unfit to undertake the ordinary amount of school work are detected and treated Prolonged concentration and restriction of movement are exhausting to young children, and variety of employment and frequent changes of position are now recognized to be necessary in order to lessen the strain Home conditions are more and more inquired into, and the general sanitation of defective areas is steadily improving In the case of neurotic and precocious children, the teacher is warned of the danger And, even for the student the tendency is now to subdivide the comprehensive examinations previously in vogue

(See also FATIGUE) A B R

OWEN, ROBERT (1771–1858) —Social and educational experimenter He was the son of Robert Owen a saddler and ironmonger of Newtown, Montgomeryshire, who was also postmaster Early sent to school he began teaching as "usher" (he says) at 7 years of age He devoured all the literature he could borrow believing 'every word," even of romances to be true Early he began to suffer from indigestion and declares that his careful attention to his food helped to determine his character In his eleventh year he went to Stamford, in Lincolnshire, into the shop of a Mr McGuffog a draper, and occupied his leisure by reading in Burleigh Park Early he rejected Christianity After assisting in haberdashers' shops—one on London Bridge one in Manchester—he became a prosperous spinning-machine maker and in 1790, became manager to Mr Drinkwater of Manchester who put Owen in charge of 500 employees He attempted to put in practice his idea that character is the outcome of circumstances and therefore blame of human beings is unreasonable In 1799 Owen removed to New Lanark near Glasgow when he determined to carry out reforms with regard to the employment of children, and the housing of workpeople

New Lanark Owen bought the mills at New Lanark from David Dale on a system of deferred payments married his daughter, and assumed the control fixing the minimum age for children to work at 10 years and providing free education for all children under that age Owen had found 1,800 to 2,000 employees, about 500 of whom were originally children from workhouses sent to the firm as apprentices He won the respect of the men by his reforms, especially arranging for the sale of good food and articles at reasonable prices

If human beings are the creatures of circumstances, then Owen saw that education of the young was a vital pre-requisite of progress With the assistance of James Mill and Francis Place, Owen obtained sympathetic associates one of whom was Jeremy Bentham, another William Allen, and two other Quakers, together, the seven partners owned the New Lanark Mills They were all inclined to the instructional system introduced by Joseph Lancaster

In 1812, Owen delivered his famous speech on education, in which he defined education as the sum of all those impressions "which we receive

from our earliest infancy, until our characters are generally fixed and established" He maintained that if a given number of children of members of the Society of Friends were exchanged for the same number of those of the inhabitants of St Giles', then a rough part in London, "the children of the former would grow up like the members of the latter, prepared for every degree of crime whilst those of the latter would become the same temperate, good moral characters as the former" So, in his *New View of Society or Essays on the Principle of the Foundation of the Human Character*, written in 1812–1813, he proceeded to the position that individuals do *not* form their own characters, they are formed by their environment Hence "any general character from the best to the worst, from the most ignorant to the most enlightened may be given to any community by the application of proper means' Education can be made an all powerful factor, and consistently with his principles Owen advocated a national system of State directed education with an education department, and suggested training schools for teachers The New Lanark Mill schools were established with the ideas of Joseph Lancaster before his mind, but Owen familiarized himself in 1818, with the school work of Oberlin Fellenberg (to whose school at Hofwyl he sent his own sons Robert Dale and William Owen), and Pestalozzi Owen's infant school at New Lanark was opened in 1816 The master chosen was James Buchanan a weaver, to be assisted by a girl of 17 years named Molly Young They were instructed by Owen on no provocation to use harsh words or actions to the children The children were not to be "annoyed' with books Instruction was to be by familiar conversation on objects around them Paintings chiefly of animals and maps were supplied Buchanan himself had to be first taught their use At 2 years of age the children began dancing lessons and at 4 singing lessons Physical exercises in drill were also a prominent feature The fees paid were 3d a month for each child The cost of the schools in 1816, was £700 a year without allowing for rent and maintenance

Experiments in America Not content with the educational experiment in Great Britain carried out at New Lanark Owen endeavoured to apply in America his educational principles for "the formation of human character when by 1825, he had bought a whole village of 20 000 acres which had previously belonged to Herr Rapp a German teacher and his colony which had emigrated from Wurtemberg in 1804 and had given the name of Harmony to this village situated on the Wabash River in the States of Illinois and Indiana Owen settled a community of 900 people and re-titled the village the "New Harmony' Again education was part of the scheme and this part of the Settlement scheme was entrusted to William Maclure a native of Ayr, who was familiar with the New Lanark School, and with Owen s plans for re-organizing society, 'so as to drown the self in an ocean of sociality" Maclure had by himself made a geological survey of the United States (published in 1809) and had started an experimental school in Spain Maclure was assisted by Thomas Say Charles Lemur, a Frenchman Gerard Troost a Dutchman hiquepal d'Arusmont and Madame Marie Frétageot (both Pestalozzian teachers), and by Joseph Neef, an ex-soldier, who had actually taught in Pestalozzi s school at Yverdun An experimental farming school, workshops, and lecture-room were part of the educational design for the children The Society broke up in 1828

Social Projects and their Results. Owen was full of social projects all his life In 1832 he established a labour exchange in Gray's Inn Road, and in 1854 he was converted from scepticism to spiritualism Throughout his career, Owen formed his own views and carried out his own actions with a due regard to moral responsibility but, theoretically, he denied its claim on others F W

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OWEN, SIR HUGH (1804–1881) —A promoter of Welsh education who first interested himself in educational work about 1839 when he acted as secretary of a movement for establishing a British school in Islington In 1843 he distributed a "Letter to the Welsh people' on the subject of day schools and induced the British and Foreign School Society to appoint agents in Wales In 1846 he became secretary of the society s Welsh branch He formed the Cambrian Association for the Education of the Deaf and Dumb and did much to popularize British schools and undenominational education in Wales In 1855 he became a member of the British and Foreign School Society and helped to establish the training colleges for teachers at Bangor and Swansea In 1879 he prepared a scheme for connecting elementary with higher grade schools which resulted in the formation of the North Wales Scholarship Association He organized higher education in Wales and to him the University College of Wales at Aberystwyth owes its existence He brought forward his idea first in 1854 in 1863 it was discussed at the Eisteddfod at Swansea in 1881 he laid his scheme before a Government departmental committee and since his death his aims have been fulfilled

OWEN'S SCHOOL.—(See LONDON CITY COMPANIES AND EDUCATION THE)

OXFORD AND CAMBRIDGE SCHOOLS EXAMINATION BOARD, THE —This was established in 1873 under an arrangement made by the two universities The Board examines such schools as have a regularly constituted body or prepare a fair proportion of their pupils for the universities or in any way give evidence of providing education of the highest grade It also grants certificates to boys and girls, under education at school who are examined under its authority The certificates are of three kinds—Higher School and Lower—the Higher and School certificates exempting the holder from the Previous Examination at Cambridge provided certain subjects have been included Schools are examined under the authority of the Board in their general work, or in their main subjects of instruction or a more detailed examination of the highest division is held for the

awarding of prizes and scholarships The examinations for certificates are held at schools, at Cambridge and Oxford, and at other convenient centres The Board also undertakes inspection of schools at any time when examinations are not going on Information is supplied by the secretaries, one at each university

OXFORD, THE UNIVERSITY OF.—When a country or an institution grew old it was usual in former and uncritical days to trace its origin to a mythical source Athens, Rome and other ancient cities wove fantastic legends round their beginnings It was so with the universities of Oxford and Cambridge The latter, even though as we now know a later foundation than the former invented for itself a mythical founder of greater antiquity than King Alfred, whom Oxford claimed more modestly for its begetter Both legends however, the Cantabrigian and the Alfredian have ceased to be of interest except to the student of comparative mythology, and our two great universities have abandoned their claim to a remote antiquity

The twelfth century, so far as Europe was concerned was illustrious for a revival of learning stimulated by the teaching of St Anselm and Abelard, and influenced also by the recovery of Aristotle s lost works It was in this period that the great Law School of Bologna, with its subsidiary faculties of arts, medicine, and (subsequently) theology, sprang into fame attracting a great concourse of students in Civil and Canon Law Somewhat later, students were attracted to Paris by the lectures of brilliant exponents of philosophy and theology Our own country furnished many of such students, though there is evidence that schools of a kind were then in existence at Oxford but not of the rank of a *studium generale* (See UNIVERSITIES RISE OF THE) The dispute between Henry II and St Thomas of Canterbury and between the former and the King of France led to the expulsion of English scholars from the French realm This was in 1167 and we are left to conjecture what became of the expelled scholars Certain it is that, before 1167, Oxford possessed no great and organized school or *studium*, and that, by the year 1170, there was one It is tempting, therefore though there is no direct evidence of a migration of students from Paris to Oxford to infer that such actually was the case However this may be, we are on safe ground in fixing the date of Oxford s establishment as an organized *studium generale* (or, as we should now say, university), at or about 1167

It was natural that the University of Paris should exert an influence over European politics which Oxford owing to the insular position of this country, could not have hoped to attain, but by general consent the latter came to be recognized as *schola secunda ecclesiae* Even in the thirteenth century, the presence of such great teachers as Grosseteste, Peckham, Roger Bacon, Kilwardby, Rich, and Adam Marsh made it a formidable rival to Paris, while, in the fourteenth century, it had gained the primacy of the intellectual world by its teaching of philosophy In this later period, the names of Duns Scotus, Ockham, Bradwardine and Wycliff made Oxford famous throughout Europe as a place where intellectual freedom was pre-eminently developed

Until the period of the Dissolution of the Monasteries, Oxford was in the diocese of Lincoln It was natural, therefore, that the Bishop should appoint the Chancellor of the *studium* at Oxford. The first appointment appears to have been made in 1214 Remoteness from the Bishop's seat and the fact that the Chancellor was himself a master and so came to identify himself with the Faculty of Arts, tended to weaken the Bishop's academic control though the University found it convenient to appeal to the Bishop's authority in its disputes with the townspeople At the close of the fifteenth century, the Chancellor's duties were devolved upon a Vice Chancellor The University, as finally constituted, consists of the Chancellor, masters and scholars of the University of Oxford The Chancellor is elected by the masters in Convocation He is always a person of eminence and high social standing, and resides away from Oxford His appointment is for life The Vice-Chancellor is nominated by the Chancellor from among the heads of houses, and is the acting resident Head of the University Of the other officials the High Steward who is appointed for life, is possessed of power to try serious criminal cases in which a resident member of the University is concerned The senior and the junior proctors are the principal executive officers The Public Orator is the official spokesman on ceremonial occasions The Registrar and the Secretary to the Board of Faculties have duties which can be inferred from the titles of their offices There exists the Chancellor s court, which has civil jurisdiction in cases where one party concerned is a resident University man

For the transaction of public business several bodies exist The Hebdomadal Council, composed of the Chancellor, the Vice Chancellor the next preceding ex Vice Chancellor the two proctors and eighteen other members who are heads of houses, professors etc , prepares all subjects of legislation to be brought before Convocation The Ancient House of Congregation, which is composed of the Regent masters, professors, heads of houses and resident officials, now has little to do beyond the conferring of degrees In 1854 it was superseded by the Congregation of the University, to which belong all members of Convocation resident within a mile-and-a half of Carfax Its function is to approve or amend legislation initiated by the Hebdomadal Council, and also to share in the election to administrative Boards The House of Convocation consists of all masters of arts and doctors of the higher faculties who have kept their names on the books This body has the final control over all acts and business Until the latest Reform Bill it had the exclusive right to elect burgesses for Parliament Any graduate may now obtain that right on payment of a small fee

At Oxford, as also at Cambridge, the Faculty of Arts has always had the predominance in University control, but the Higher Faculties of theology, law, and medicine have superior rank The other Faculties are *literae humaniores*, modern history mediaeval and modern languages, Oriental languages, and natural science, including mathematics The various degrees are Bachelor and Master of Arts, Bachelor and Doctor of Divinity, Law, Medicine, Science, Letters, Music, Doctor of Philosophy, and Bachelor and Master of Surgery For the B A degree nine terms of residence are required For the B Sc and B Litt , and also for the D Phil , six terms

Entrance to the University is by the ceremony of matriculation, for which the student requires the Grace of his College or Hall or of the Censor of Unattached Students The first examination, Responsions, is taken in the first term of residence unless the student has passed a recognized certificate examination at his school After four or six terms he takes the First Public Examination before the Moderators at the end of his time, the Second Public Examination The intermediate examination is commonly known as Moderations and the Final so far as the classical and philosophical section is concerned as Greats This section is especially typical of Oxford In the Honours Schools candidates are placed alphabetically in their respective classes

The oldest professorship is that of the Lady Margaret s Professor of Divinity It was founded in 1504 by the Lady Margaret, Countess of Richmond and mother of Henry VII The five Regius Professorships of Divinity, Civil Law, Medicine Hebrew and Greek are of Henry VIII s appointment in 1546 These six are the chief in rank but there are besides professorships and readerships in a variety of faculties and subjects as music ecclesiastical history and so forth It should be noted that since Canon Law ceased to be studied the Law degrees are granted only in Civil Law Hence the appellations of B C L and D C L It has been shown above that early in its history Oxford through its teachers attained European eminence in philosophic learning In the thirteenth century the coming of the Mendicant Orders—the Dominicans the Franciscans the Carmelites and the Austin Friars—greatly affected the University teaching So recently as the beginning of the last century there was a belated survival of their influence on the exercises of the schools in the phrase "doing Austins In the Middle Ages the Austin Friars had their house on the present site of Wadham College and the *disputatio in Augustinensibus* was a customary exercise performed in that Friary Oxford as everyone knows has been called the home of lost causes The statement is true but the insinuation is not justified Over and over again the University has shown an impossible loyalty when the object of such loyalty was effete but over and over again it has adapted itself to new circumstances and opinions It retained scholastic teaching when it had lost its vitality and elasticity and had hardened into a rigid system lifeless and absurd If Brasenose College was founded as a last effort to stay the tide of the Renaissance Corpus Christi College and Cardinal College, or Christ Church were founded to advance the New Learning When the Reformation came Oxford held out against change but in course of time evolved a moderate type of Churchmanship often called High In the sixteenth century this type was strongly stamped on the University by Archbishop Laud, one of the greatest benefactors it ever had Among the services he rendered was the reform and revision of the Statutes in 1636 The Laudian Statutes continued until the second half of the nineteenth century In the Civil War the University was, as might have been expected, devotedly Royalist, yet in spite of its affection for the Stuarts, it resisted as a whole the arbitrary proceedings of James II in regard especially to the colleges On the other hand under the Georges, it became strongly Jacobite and it was not until the reign of George III that it was reconciled to the Hanoverian dynasty When the Methodist movement, developed by John and Charles Wesley, was carried forth into the outside world, Oxford remained adverse to 'enthusiasm," but the old High and Dry Churchmanship became tinged with the glow of the Catholic Revival inaugurated by the Tractarian movement, a movement which has transformed and is transforming the English Church It was a misfortune that Oxford being ardently Tory in politics there was thought to be some necessary connection between High Churchism and Toryism Certainly the former suffered in public opinion, from this identification of religion with party politics At the present time Oxford seems bent on showing itself ultra progressive and eager to break away from its ancient tradition The abolition of compulsory Greek the admission of women to the University the drastic reform of its Theological Faculty the ever-widening scope of its curricula appear to be evidences of a feverish desire to be in advance of reform

The College System, as developed at Oxford and Cambridge gives them a character all their own distinguishing them from the typical university of other countries In the early Middle Ages the student, as has been observed above lived where and how he pleased In course of time the difficulties of lodging becoming intolerable, little groups of students would hire a whole house on their own account in which they lived a common life, uncontrolled by university authority Such houses were called at Cambridge hostels at Oxford halls The next step was for the University to impose regulations on these hostels especially with regard to the rent and to the recognition of the principal whom the residents in the hostels themselves elected

It is usual to reckon University College Oxford as the earliest of all college foundations This is not really the case In 1249 William of Durham bequeathed 310 marks to the University to the end that with the revenues issuing thence ten or eleven or twelve masters or more should be sustained and relieved in the schools of Oxford University College no doubt was developed out of this benefaction but not until after the foundation by Walter de Merton Bishop of Rochester and Chancellor of England of the college which goes by his name This great work of his was begun in 1264 but the full development of his plan was not accomplished till ten years later when the founder gave to his scholars his final draft of the statutes for their society The date 1274 therefore may be accepted as that of the founding of the first academic college in England It was more than a college however that Merton founded it was the whole system of English university education "His statutes' to quote from the late Registrar of Cambridge University Mr J W Clark 'or Rule of Merton as it came to be called stood to subsequent colleges as the Rule of St Benedict stood to the later monastic bodies The object which Merton had in view was to secure for his own order in the Church the secular priesthood the academical benefits which the religious orders were so largely enjoying' He intended that his beneficiaries should be *Scolares in Scolis degentes*, solely occupied in study under no religious vows, unconnected with any other institution, subject to no external authority, not employing their time in ritual or ceremonial duties for which chaplains were appointed and not engaging in any handicrafts

At first the College communities were small, and very simple in their arrangements, and consisted of independent democratic societies of graduates For it was not until later that persons of a lower class than the *socii* were admitted Provision was made for the prime necessities—lodgings a common hall and a kitchen The nearest parish church served for a chapel Such books as they had were kept in the room best suited for security and the master simply lodged in the best room of the college The quadrangular arrangement, to which we have so long been accustomed, was a much later growth

The colleges, while they are constituent parts of the university system are independent units At Oxford, the heads of houses have a variety of titles, provost president master principal, rector, dean At Cambridge, the name of the Head is Master with the exception of the Provost of King's and the President of Queens The society consists of the master fellows and scholars that is to say of the beneficiaries of the founder or founders who alone in former times enjoyed the privileges of the college Later, outsiders willing to pay for their own maintenance were admitted under the name of commoners at Oxford and of pensioners at Cambridge Occasionally also persons of rank or wealth were accepted, of course at a higher charge as fellow-commoners or gentleman commoners and associating on an equal footing with the fellows The duties of the college are apportioned to the different fellows To the dean (or, in larger colleges two deans) is committed the maintenance of discipline to the bursar or bursars the management of the college estates and business to the tutors the duty of looking after the pupils assigned to them to the steward the charge of the commissariat A great part of the teaching in both Universities is done in the colleges by the tutors and lecturers In certain cases their usefulness has been extended by the practice of intercollegiate lectures It is an obvious economy of labour that if one lecturer suffices for the number of students in a particular subject two or three more should not be employed in lecturing upon it only to the members of their own societies The College Hall in which the fellows, scholars and commoners or pensioners all dine at tables marking college rank and seniority is as it were, the visible symbol of the society's corporate unity as it has always been since the first college was founded

The Oxford Colleges *University College* Priority is given to University College because it represents the benefaction of William of Durham who in 1249 bequeathed to the University 310 marks wherewith to sustain and relieve in the schools of Oxford ten or eleven or twelve masters His beneficiaries were no doubt, accommodated in lodgings, and it was not until 1280 that the University made regulations for the conduct of University Hall The fact that this was the first Hall acquired by the University has given it a place out of its chronological order Until the middle of the nineteenth century its fellows and scholars were chosen from the North Country and Durham, but a commission broke down the ancient tradition Readers of history will recall the efforts of the master, Obadiah Walker—'Old Obadiah," as he was called—to introduce the Roman Catholic discipline into the College in the reign of James II That monarch is still represented by a statue in a niche in one of the quadrangles It was placed there by the audacious master The glory of University is Oxford's one great poet, Shelley, who is commemorated in the College by Onslow Ford's beautiful and poetic sculpture 'Shelley" Among notable names mention may be made of Dr Radcliffe Sir Roger Newdigate, and Dean Stanley

Balliol College The real date of its foundation is 1282 It is true that in 1266 John de Baliol, by way of penance for an offence committed against the Bishop of Durham, placed a few scholars in a hired house somewhere on the site of the present college But, the estate being mismanaged, John de Baliol's wife Devorguilla complying with her husband's dying request placed his foundation on a better footing In 1282, therefore, she established a society of sixteen scholars under the government of two proctors in what is now called Broad Street In the fifteenth century, three distinguished Balliol commoners, John Tiptoft, Earl of Worcester Humphrey, Duke of Gloucester, and William Grey afterwards Bishop of Ely, built the Hall, the Solar and the Library Naturally the tradition of the College was associated with the North but in the mid-nineteenth century, when Dr Jenkins was master, most of the fellowships and scholarships were thrown open, and then began that great development, which was carried forward by the succeeding master, Benjamin Jowett, which raised the College to the first place in Oxford as the nursery of scholars and men of affairs The names of Lord Milner, Lord Curzon and Mr Asquith are typical

Merton College It has been shown above that Merton is the oldest of all college foundations in either University Its founder was Walter de Merton Bishop of Rochester a great Churchman and statesman of the reign of Henry III In 1264, he gave a house on his estate at Malden, in Surrey, "for the perpetual maintenance of twenty scholars studying at Oxford" This he named *Domus Scolarium de Merton* A year later, he obtained a site for his scholars in Oxford itself In 1274, however, his final statutes were issued, and we take that year as the date of the real foundation of the College system Among the earliest of famous Merton men were Bradwardine, one of the six Archbishops the College produced in the thirteenth and fourteenth centuries, and John Wycliff Later, we find Henry Savile and Sir Thomas Bodley, Harvey, the celebrated physician, and Richard Steele In our day Lord Randolph Churchill and Lord Halsbury have added distinction to the College

Exeter College It is curious that two colleges standing side by side Exeter and Lincoln, are alike in being ruled by Rectors and in being named after the Sees of their respective founders Of these, Exeter began its existence as Stapeldon Hall, in which the twelve scholars of Walter de Stapeldon a fourteenth century Bishop of Exeter, resided The bishop's capacity for State administration led to his appointment as Lord High Treasurer to Edward II, whose follies he vainly endeavoured to restrain A rebellion breaking out in London when Stapeldon was in charge, he was brutally slain by the mob He lies in his Cathedral Church, on which he had lavished treasure worth about £50,000 of our money His interest in the Cathedral, however, did not prevent him from remembering the poor scholars of his great West Country diocese In 1314 he placed

his little band of twelve poor students of philosophy in Hart Hall, where Hertford College now stands, but shortly after removed them to the site of the existing Exeter College One peculiarity of his statutes was the annual election of the Rector by the scholars In 1566, that clever statesman, Sir William Petre, greatly enlarged the scope of the college and gave it a new set of statutes It is to the credit of Exeter that it offered domicile at the close of the fifteenth century, to the great Renaissance scholar, William Grocyn who lectured on Greek literature in the College Hall Among those whose names adorn the college are Prideaux, Kennicott Lord Chief Justice Coleridge the Rev F D Maurice, J A Froude Sir Charles Lyell Sir Edward Burne Jones and William Morris

Oriel College How this College obtained its name is a question still unanswered It may have derived it from a building noted for its oriel window on the site chosen by Adam de Brome for the college he founded in 1324 In the last century, Oriel was raised to a great height of celebrity by members of its society—Archbishop Whately and Dr Arnold, typical of one school of thought and Keble, Newman Pusey Hurrell Froude and Dean Church, leaders in the fight for the Catholic Revival Other celebrities were Sir Walter Raleigh William Prynne Bishop Butler Gilbert White Bishop Wilberforce Matthew Arnold and Cecil Rhodes Of these the last named will always be remembered by the College for the generous benefaction he bequeathed to it Until the closing decades of last century five Halls or places of residence for students not incorporated as colleges were in existence St Alban s is now absorbed by Merton College, New Inn by Balliol Magdalen has become Hertford College St Edmund alone maintains its separate existence, and St Mary now forms an additional quadrangle of Oriel The college thus becomes connected with the fame of the Blessed Thomas More and of Erasmus who lectured in St Mary Hall

Queen s College The founder of the *Aula Scolarium Reginae de Oxon* was Robert de Egles field a member of a Cumbrian family and Chaplain to Edward III s consort Queen Philippa Her benefactions to her chaplain s college found grateful acknowledgment in 1341 in its title Fglesheld s plan provided for a Provost and twelve Fellows in Memory of Our Lord and His Apostles and if circumstances should permit with the addition of seventy scholars in imitation of the seventy disciples No fewer than four other Queens Consort were benefactresses The college is remarkable for certain interesting survivals—the summoning to dinner *per clarionem* for which purpose a trumpet is now used and the ceremonies of the Christmas and New Year festivities The former include the Boar s Head procession and the carol *Caput Apri defero* Another survival is the Provost's seat in Hall in the middle of the table the ends and opposite side of which are, unless in case of necessity, left unoccupied This is in imitation of the traditional appearance of the Last Supper The ancient buildings have given place to the splendid and spacious buildings we see now, which were begun at the close of the seventeenth century At this College the Black Prince and Henry V studied, the latter when his uncle, Cardinal Beaufort, was there For a time it was the residence of Wycliff Other celebrities were Archbishop Langton, and Cardinal Bainbridge

New College The founding of the "College of St Mary Winton in Oxenforde," by William of Wykeham in 1387 opened a new era in the system of collegiate life His great purpose was to train the young generation for the secular priesthood With this end in view, he first established his magnificent College of Our Lady at Winchester, and next a new college at Oxford where his Winchester scholars might continue their education It is curious that after the lapse of more than five centuries this latter college is always known as "New ' College Here as at Winchester the teaching was provided by the seniors and like Eton and Cambridge Wykeham's scholars at Oxford kept themselves apart to a very large extent from the University authorities The later common practice of college lectures owes its origin to Wykeham s initiative As until the middle of last century the College consisted only of Wykehamists, it was always a numerically small society of scholars Thrown open to the world it is now one of the largest of the colleges and is conspicuous for the success of its *alumni* Its fine choral establishment preserves a pale reflection of the former splendour of the worship in the majestic chapel which by the way retains many examples of stained glass as fine as any mediaeval specimens that we have

Lincoln College The Lincoln College of the Blessed Mary and All Saints in the University of Oxford" was founded as a small society of graduates in Arts studying theology by Richard Fleming Bishop of Lincoln in 1427 Like its next door neighbour Exeter College Lincoln is presided over by a Rector To the second holder of the Rectorship, Dr John Beke, it owes its establishment on a firm basis as a well-equipped and organized society In the Reformation period the college suffered, with many other excellent institutions much injury As a typical small college it is of great interest The torpor to which its misfortunes condemned it ceased half a century ago and it now displays a great intellectual activity Conspicuous among Lincoln men were George Hickes the Nonjuror, Dr Radcliffe, the patron of medical and scientific studies in Oxford, Archbishop Potter and John Wesley

All Souls College ' The College of all the Souls of the Faithful Departed in Oxford ' is unique among all college foundations It was founded in 1438 by Archbishop Chichele with Henry VI as titular co-patron for a warden and fifty fellows, the one half of whom were to be jurists students proceeding to the higher degrees in Law, and the other to be Artists that is Masters of Arts preparing for Holy Orders and degrees in theology Thus it is not a college for undergraduates except that the Warden appoints four to serve as Bible Clerks As remodelled, the Society is composed of a warden, certain professors and readers in law and history, certain fellows elected for their knowledge of law or history, and the four Bible clerks There are besides a few official Fellowships and research Fellowships, and two Readerships in Roman and English Law With its Professoriate and magnificently equipped Law library, All Souls' is the centre of legal study in Oxford and is a great promoter of the study of Modern History Of its buildings, the Chapel and the Codrington Library are of surpassing greatness The reredos and the windows of the former are among the finest things in Oxford The list of All Souls

worthies is a very long one and includes the names of Linacre, Sydenham Blackstone, Christopher Wren, Jeremy Taylor, Reginald Heber and Edward Young

Magdalen College William Patten, of Waynflete, head master of Winchester was appointed in 1441 the first head master of Eton Later he became Provost of Eton, Bishop of Winchester and Lord Chancellor In 1473 the foundation stone of Magdalen College was laid on the site of the ancient Hospital of St John Baptist on the banks of the river Cherwell This property Bishop Waynflete had acquired with the purpose of establishing a house of scholars The work as carried out was on a sumptuous scale, but the crowning glory the world-famous tower was not added until 1505 Set in beautiful surroundings with its deer park, lawns and meadow walks this College has no equal in Oxford for charm Alone among the colleges it possesses a cloistered quadrangle and its State apartments for the Visitor, the Bishop of Winchester, and for royal guests, give it an air of grandeur Its choir on which it prides itself always maintains a high level of excellence Cardinals Wolsey and Pole John Colet Henry Sacheverell Bishop Phillpotts (Henry of Exeter) Dean Mansel and the wonderful old President Dr Routh among scholars Addison and Gibbon John Lyly John Foxe and Charles Reade in their respective ways have extended the fame of this Society

Brasenose College One of the many hostels or halls which abounded in Oxford was known by its sign a brazen nose This and some adjoining halls were bought up in 1512 by Bishop Smith and Sir Richard Sutton who reconstituted them as the King s Hall and College of Brasenose The Hall having been North-country in character, the college carried on the North country tradition and continued for long to draw upon the landed families of Lancashire and Cheshire for its recruits Whether in the academic sphere or in that of sport, Brasenose has been able to give a good account of itself Such names as those of Dean Nowell Lord Chancellor Ellesmere Bishop Heber, Dean Milman, Sir Tatton Sykes Traherne, Barham author of *The Ingoldsby Legends*, and Burton who wrote *The Anatomy of Melancholy*, exemplify the diversity of types of B N C men

Corpus Christi College The College described next above was founded as a sort of reaction against the Renaissance Corpus Christi was the first fruit in Oxford of the New Learning Movement Its founder, Richard Foxe Bishop of Winchester was warmly in sympathy with the movement and when he bethought him of founding a college on the lines of modern thought he was aided in his plans by his friend, Hugh Oldham, Bishop of Exeter It has been said above that Grocyn lectured in Exeter College on Greek literature, but Corpus Christi was the first college in England to make permanent provision for the teaching of Greek For this purpose a Fellow or Scholar was allowed to reside in Italy for three years that he might qualify himself as a teacher of the New Learning and foreign scholars, such as Ludovicus Vives, a Spaniard, and the Bavarian astronomer Nicholas Kratzer, were admitted of the College Among its members at different periods were Cardinal Pole Bishop Jewel, Richard Hooker, the Duke of Monmouth, John Taylor Coleridge, John Keble Thomas Arnold, Sir Henry Maine, and John Ruskin

Christ Church If All Souls' College is unique in being a Society only of a Warden, Professors and Readers in Law and History, and Fellows elected for distinction in one or other of those subjects, Christ Church is unique in combining a Cathedral establishment with a Society of Students, the Dean being the head of the whole community Its real founder was Cardinal Wolsey, though Henry VIII as was his wont, by practically refounding the Cardinal College of Wolsey's foundation, and renaming it, gained for himself the credit that rightfully belonged to another In 1525, the Cardinal obtained letters patent, empowering him to build his college within the precinct of St Frideswide Wolsey s plan was on a very sumptuous scale including on the north side of the great quadrangle a vast college chapel with a large staff of priests and choristers He was able, however, to build only the hall and the kitchen and, in 1532 Henry put the college on a new basis settling on it a large endowment Fourteen years later, the neighbouring Oseney Abbey having been dissolved he removed the lately created See from there to Christ Church, and thus the college assumed its double character of a cathedral body and an academic society the Cathedral Church serving both for the Dean and Canons and as the College Chapel The college buildings cover an immense area The Hall is one of the finest refectories in Europe and the truncated Cathedral is a building of extreme interest It is impossible to enumerate the famous men who have been members of " The House as it is familiarly called It has produced five Archbishops of Canterbury, nine Archbishops of York and ten Prime Ministers King Edward VII was among the members

Trinity College is the successor of an older establishment Durham College which, from the thirteenth century to the sixteenth had housed the students sent to Oxford from the Benedictine Monastery of Durham Cathedral Durham College, at the Dissolution shared the fate of its parent House, and its site and buildings were acquired in 1555 by Sir Thomas Pope an Oxfordshire gentleman A considerable portion of the buildings as we see them now including the beautiful chapel, were reconstructed by Wren The most famous name on the college roll is that of William Pitt, Earl of Chatham As a nursery of bishops it has been conspicuous

St John's College was founded in 1555 by that munificent London citizen, Sir Thomas White, to the praise and honour of God and of the Blessed Virgin Mary and St John Baptist " A great purchaser of monastic property he acquired the buildings of the small Cistercian House, which owed its foundation to Archbishop Chichele in 1437 and was dedicated to St Mary and St Bernard The Chapel and Hall and part of the front quadrangle formed part of Chichele's buildings Its greatest benefactor was Archbishop Laud, who, when he was president built nobly and generously Another equally venerated Primate of All England, Juxon adorned this college, which has stood these three centuries and a half for the sentiment of Church and King "

Jesus College From its foundation in 1571, this College has always been preponderatingly Welsh in its associations Its original founder was Dr Hugh Price After the Restoration of the Monarchy, a great benefactor to the College appeared in the person of its Principal, Sir Leoline Jenkins,

who, besides building the library, left his whole estate to the Society In quite recent times the old exclusiveness has been broken down by the division of the scholarships into Welsh and Open, and the tendency has been to make the two elements, the Welsh and the non-Welsh, about equal

Wadham College The site now occupied by this College was that of the dissolved House of the Augustinian Friars It was acquired by a Somerset squire, Nicholas Wadham whose wife, Dorothy, carried out, after her husband s death his munificent plan, drawing up mostly with her own hand the remarkably enlightened statutes by which the Society was to be regulated Far in advance of the time it was ordained that fellowships should be terminable and open to laymen The buildings erected by the Wadhams besides being extremely beautiful and enhanced by amenity of surroundings are remarkable as representing a much earlier Somerset architectural tradition than their date would lead us to expect It was in Wadham College that the first meetings of the Royal Society were held

Pembroke College This College was re founded under its present name in the reign of James I but Broadgates Hall which it absorbed connects it with the very early days of University history It can thus claim as its *alumni* Cardinal Repyngdon Bishop Bonner, Camden the historian Francis Beaumont the dramatist and John Pym As Pembroke College it is fragrant with memories of Dr Johnson the best known of all the men who have resided within its walls

Worcester College This Society as such was not incorporated until 1714 but its site has been dedicated to learning for six centuries It was shown in the case of Trinity College above how the great Benedictine Houses sometimes made provision at Oxford for members of their community to study there In the thirteenth century Gloucester College was formed by an association of the lodgings for Benedictines from Gloucester Pershore and other Abbeys each Abbey having its own lodging At the Dissolution the place was left desolate but in 1560 Sir Thomas White established here a principal and a hundred scholars with the name of St John s Hall intending it as a kind of supplement to St John s College of which he was also the founder But the older name of Gloucester clung to it and it was known as Gloucester Hall Toward the close of the seventeenth century, an attempt was made, but without success to use it as a place of education for young Greeks who belonged to the Holy Orthodox Eastern Church When its fortunes were at the lowest ebb Sir Thomas Cookes a Worcestershire baronet refounded Gloucester Hall as Worcester College

Hertford College Part of the site now covered by this College was occupied as far back as 1283 by an institution known as Hart Hall Early in the fourteenth century it sheltered for a short time the scholars whom Walter de Stapeldon shortly after transferred to their present house in Exeter College Later again William of Wykeham used Hart Hall temporarily for his New College scholars In 1710, Dr Newton the principal made a great effort to transform it into a college and in 1740 it was incorporated by charter but owing to lack of funds it proved a failure During its short-lived existence however it was distinguished by the matriculation of Charles James Fox In 1816 the college property was transferred to the University in trust for Magdalen Hall which existed until 1874 when Mr Baring endowed it as Hertford College with provision for a goodly number of fellowships and scholarships

St Edmund Hall represents an order of things earlier than any of the colleges The Halls were merely places of residence for students not incorporated as a Society St Edmund Hall is the last survivor of the five principal ancient Halls It is dedicated to a thirteenth Archbishop of Canterbury, Edmund Rich who was afterwards canonized Since 1557 it has continued as a Public Hall of the University the Provost of Queen s possessing the right of appointing the principal Threatened again and again with extinction or absorption, it seems likely to weather every storm

Keble College dates from 1870 when it was founded by a group of Churchmen to commemorate the name of John Keble the author of *The Christian Year*, and one of the leaders of the Tractarian Movement In the strict academic sense it is not a college but it was admitted into the University as a New Foundation for Academic Study Intended chiefly for men of moderate or small means it took a new line of departure in regard to the rooms (which are arranged along corridors not on staircases) and to the living arrangements all meals being taken in common in the dining hall The venture of faith has been amply justified by the successes of Keble men in many fields of activity A REYNOLDS

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PADUA, THE UNIVERSITY OF—From the sixteenth century onwards the University of Padua has had many well known historians such as Riccoboni, Tommasini Papadopoli Facciolati Colle Gloria etc The palace of the University almost in the centre of Padua, is a majestic edifice with a courtyard in the style of Sansovins, built by the Venetian republic in the sixteenth century for the schools of the jurists though subsequently the students in arts also met there To gain a rapid conception of the glories of the University you have only to enter the great courtyard of the palace and look at the carved or painted coats of arms that cover all the walls to visit the great hall also ornamented with shields and perhaps, also one of the schools These shields recall the innumerable Italian and foreign students who found at Padua not only knowledge but also liberty of thought, and even of religion, as early as the sixteenth century The republic of Venice, to which Padua was added in 1405 cherished the *studium* (which, so far as jurisprudence is concerned, dates from 1222), and in the sixteenth-century it became one of the

greatest, if not the greatest, in the whole of Europe

The statutes (1331) of the first corporation, or university of the jurists have come down to us They are modelled, in great part on the ancient statutes of the *Universitas juristarum* of Bologna Of the corporation or university of the students in arts which comprehended the medical, philosophical and theological students we do not, up to the present know the more ancient statutes Quickly, in fact there rose beside the university of the jurists the university of the students in arts though the former always held first place even for the number of its students

The University Organized into "Nations" The *Universitas juristarum* in the heyday of the *studium* consisted of twenty two *nationes* or national groups of scholars often at enmity with each other and divided into cismontane or Italian and ultramontane or foreign students Among foreign students the Germans held the first place by reason of the conception then prevalent in Italy of the Holy Roman Empire although French English and Scottish students were not lacking The *Universitas artistarum* was also divided into *nationes* but its numbers were less It often embraced most of the English and Scottish students (*Natio anglica et scota*) who mostly confined themselves to the study of medicine To this day the shield of the student Harvey is seen high up in the great courtyard But the university of the jurists can also boast of illustrious scions of English families among them Sir Francis Walsingham

The students were taught by a large number of professors The law courses followed the division of the *Corpus Juris Civilis* and of the *Corpus Juris Canonici* Of the many chairs some were dedicated to the exposition of the traditional doctrines based on the Roman text and carrying them further yet without wholly departing there from thus constituting little by little the common law of Italy other chairs served to elucidate the pure text according to the method of Alciatus Jurists like Socino Mantua Pancirolı and Menochi taught at Padua and it thus became an international school of common law the works of its masters were known and printed throughout the whole of Europe The courses of the professors in arts and medicine were especially in the humanities also attended by the law students In fact the *studium* of Padua was one of the first whence the light of erudition shone forth There famous philologists and historians like Robortello Bonamico and Sigonio taught and philosophers expounded the text of Aristotle Already in the sixteenth century the Venetian Republic with rare wisdom and broadmindedness had erected there an amphitheatre where public lectures on human anatomy were given and it is still shown to-day in the palace of the university as a monument of the republic It is said that Harvey derived his idea of the circulation of the blood from the lectures of Fabrizio d Acquapendente and who can forget at Padua the great Galileo Galilei who taught there for eighteen years (1592–1610) and made many of his marvellous discoveries there? His house at Padua was according to the custom of the time the meeting-place and the abode of scholars of all nations

The Period of Decadence In the seventeenth century the decadence of the *studium* of Padua set in but even then famous professors were not wanting any more than they were in that eighteenth century when the Republic of Venice strove in every way to prevent the decay of the *studium* by asking counsel of famous men, by introducing new chairs by increasing the university library (founded in 1629) and adapting an ancient castle of Eccelino da Romano as an astronomical observatory (1767–1777)

The old organization of the scholars into two great corporations or universities resembling free republics became in process of time discordant with modern ideas The *studium* assumed, in a thousand different ways, the aspect of a State institution the Republic of Venice supplied the necessary funds, it presently took away the right of electing the professors (whom it attracted by a lavish salary) and then also the secondary professors From 1517 the Republic entrusted the supreme direction of the *studium* to a magistracy of Venetian citizens who styled themselves the *Riformatori* of the *studium* of Padua, the corporations retained the right to choose their own rectors from the body of the scholars—not always an easy thing since the expenses of the office were heavy, and therefore the posts were often filled by prorectors The division into two universities lasted until the scholastic year (1805–1806) when Padua had already been seven years under Austrian dominion Ceded to France by the peace of Presburg (11th Nov 1805) when the first kingdom of Italy was constituted the University was presided over by regents when Padua again became a part of the Austrian Empire (7th Nov 1813) it was ruled by a single rector for each elected annually every vestige of the ancient corporations disappeared—except the maces of the two beadles, who to this day in their togas precede the rector and the Academic Council—these too in their togas—on solemn academic occasions During the Austrian domination the decadence of the University became more and more marked and its pristine vigour was restored only when the State of Venetia returned to the mother country in 1866 As a result of the Great War other accessions have been secured of those Italians who were previously cut off from it politically

Revival in Modern Times To-day the new history of the *studium* of Padua now approaching its seventh centenary is disclosed to the view of the visitor to the new library of the University with its spacious rooms for professors and students, and the new institutes of hygiene, mineralogy, and anthropology, which standing apart from the central edifice form a tranquil university city, soon to be enriched by other buildings for chemistry, physiology zoology, materia medica, and pathology

Thus we have a complete renewal of the fabric of the University (thanks to generous endowments of capital furnished by the State the commune, and the province of Padua) which soon will be endowed with a new building for the Institute of Anatomy and the School of Practical Engineering It cannot be said that the University of Padua lives only on its past glories from century to century it has sought to renew its youth, and to-day pursues the same path, availing itself also of the proximity of Venice, where the precious State archives the richly-furnished library of St Mark, and the wealthy Venetian Institute of Science, Literature and Art offer valuable accessory facilities of all kinds to the studious B B

PAGEANTS AND MASQUES AS EDUCATIONAL RESOURCES.—Though pageant and masque have much in common, the pageant is the more direct presentation of noteworthy acts and accepted facts dealing primarily with actual historical personages and groups, and in ways of common acceptance, while the masque endeavours to express more distinctly subjective elements, and to give form to the ideals, ideas, and imagery which its devisers and performers seek to impress upon their public The Roman Triumph is the supreme example of the pageant the most familiar masque still is doubtless *Comus*

The pageant, like the Triumph is of temporal life and character, and often richest in elements of militarism and state, the masque is more or less symbolic—in fact in individual or general terms, mytho poetic or religious The masque is thus evolving, in modern times towards symbol-drama or symbolic opera in older days it became regularized into ritual The festival of the Panathenae was a sacred masque and the typical contrast to the Roman pageant though from the same beginnings, of civic procession Yet the masque is rich in pageant elements, while the pageant is successful, not merely in the measure of its magnitude magnificence and truth to life but according to the wave of idealism which it expresses and intensifies

Great pageants can occur but rarely usually with definite historic commemoration, like that of the "Pacification of Ghent" or the "Crossing of the *Mayflower*" More familiar and practicable are the pageants of cities, which a few years ago promised to become almost general thanks largely to talented pageant-masters, such as Mr Louis N Parker and Sir Francis Benson The more historic cities, those uniting spiritual with temporal records have naturally yielded the richest and most varied pageantry witness the pageants of Edinburgh York and Oxford, the former elements preponderated at Winchester St Albans and Chelsea and the latter at Dover and Chester The British Army and the Church each had its pageant

Processions of Labour frequently exhibit pageant elements, even symbolic ones and the advent of women into politics has been expressed by elements of both pageant and masque in their processions Of civic pageantry the Lord Mayor s Show is the familiar link of past with present, not without suggestion for the future While civic masques are yet rare a notable one was that of London presented by Walter Crane in 1904

Some Educational Aspects Though in some of these masques Education was not without a place, this was rather commemorative than pedagogic, but in America more than in Britain the educational aspects of pageantry and masking have been coming forward Thus a "Pageant of Education" was presented by the Boston Training College in 1913 and by the Natal Teachers Association in 1919 Beyond the State theatres of ancient Athens or modern France, the municipal theatres of Germany, or the repertory theatres which express the reviving art of England there is rising in America especially, the conception of "The Civic Theatre," boldly defined as 'the efficient treatment of the recreative arts of the community" Among these arts, masque and pageant are claiming a foremost place Thus while the magnificent but too isolated and sporadic, endeavours of British cities have too much passed away without permanent result the American pageant-movement has been growing towards recognition as a needed factor for the uplift of life, civic and educational together—and this for town and for country, for industries and for leisure for university and for schoolhouse alike The redemption of leisure from trivial or unworthy use, and the vitalization of school studies by imagination and constructive effort are in this way brought together, and the effects upon city and citizen student and schoolchild are encouraging The divorce which modern industry has too much established between Labour and Life ("living" being now merely synonymous with livelihood), can most plainly be annulled through Art, in which labour and leisure unite, with true re-creation The mistress art is obviously that of Drama—in the wide sense ranging from simplest pageantry and symbol to the harmony of all the Nine Muses and utilizing at once both the social presentment of pageant and masque and the tragedy and comedy of the individual

Tableau and dance ballad and song choir and orchestra lyric and epic, must thus be reunited in a poetry more living than that private reading of its printed words to which school and college have too long confined us Through this collaboration artists find fuller scope art-schools and colleges an awakening which reacts upon every department of craftsmanship and design The Muses again become educators and awaken in teacher and child alike the dormant poet who lies however seldom aroused in every human soul Schoolmasters like Percival Chubb professors like Baker of Harvard citizens like Jane Addams of Chicago are thus co operating with poets and pageant-masters like Percy Mackaye and others and, with generous help from cities and universities from private generosity and even from public foundations great schemes of pageantry are emerging for every phase and aspect of life Schools and churches clubs and societies are thus expressing their individuality and purpose District and village as well as town and city are being stirred towards expression Local festivals and national ones are becoming ennobled, so that the redemption of the Fourth of July from its long absorption in parades ovations and crackers is proposed The American nation is presented at its best its heritage, precious and unique is being incorporated into a nobler community existence no longer submerged in monotonous and narrowing urban life

By its magnitude the pageant is always best in the open air parks and playgrounds thus gain new uses This return to drama in the open air is on every scale up to great endeavours in forest and mountain on river, lake and sea-shore and is thence reacting through theatres and schools upon the play of children in their own homes and gardens, lanes and back-yards The "*plein air*" movement with which painters have familiarized us in one way and the open air slogan of the hygienist are thus uniting

A notable English writer, Mr Holmes has experienced a veritable educational conversion by help of his "Egeria" the drama-loving mistress of a village school and the *Perse Schoolbooks* demonstrate the awakening of poetic and even dramatic elements as a normal possibility everywhere Hitherto we have not got such results, plainly because we have not sought, encouraged, elicited them As instruction in the letter becomes subordinated to education in the spirit, results yet more remarkable will follow in every school where

teachers and pupils take courage and counsel together

Methods and Results. Here questions may be asked first, how to begin, second, what range of repertory, third, with what educational purposes? First, the beginning This we best learn from childhood itself never so happy as in some dramatic game or make-believe When these to us seem petty or prosaic we have only ourselves to blame whether by poverty or by comfort by dull lessons or dull home life we delay the arousal of the Muses, who are but the latent higher moods of every awakening soul Let us join however, in their make-believe commonplace though it be and thence lead it a stage further now towards heroic war or again to noble peace Strutting with one stick for sword and another for steed, we may thus develop into a march of heroes and this from earliest history to latest The crude mimicry of a street funeral may be raised to a scene of ennobling sorrow or the capers round the piano-organ into a masque of Harvest or the return of Spring A Border ballad a Scots or English folk song may be not only read and sung but acted and thus gain twofold vividness for the brightest and tenfold for the seeming dull So with fairy tales *The Sleeping Beauty* in the garden corner never fails of its effect, and may be developed with variants, up to William Morris s presentment of Brunehilde As fairy tale leads on to story ballad to epic so their acting, however crude to begin with may lead on to vivid pageantry, symbolic masque Legend and poetry have always interacted so knowledge of history and sympathy of interpretation are thus best aroused together Each class each school, may eagerly search the repertory of history some becoming effective pageanters others developing its tales to poetic masking and each thereafter learns from the other

The Toy Theatre which did so much for Goethe's childhood is available for childhood generally the wonder is that it has not ever since been part of the outfit of every school—indeed every nursery Do old prejudices—not entirely without foundation—still delay this? From the debased theatre which was the evil legacy of Restoration times and the artistic starvation which came from the Puritan protest against it here is the escape The secret is to begin boldly yet simply too, with such children teachers parents as may be in the mood, such occasion or subject as may recommend itself and such simple properties as lie to hand Given this spirit it grows through school and into homes Needed properties are ingeniously and cheaply made with endless reaction on the ingenuity, intelligence and handicraft of girls and boys alike The movement grows until children of every age and stage can produce fitting fêtes which first mothers then fathers soon even critical friends, will be pleased to attend In a few years these children, grown to youths will be producing pageants and masques, not only effectively played, but designed and produced among themselves More training colleges than that of Boston are now stirring in this matter more than Californian universities as well Most ambitious and comprehensive were the "Masques of Learning—Ancient, Mediaeval and Modern" produced at University Hall, Edinburgh, in 1912, and a year later at the University of London Here the endeavour is to present characteristic scenes illustrative of the progress of culture in the widest sense, interweaving with the pageant of history something of its philosophy as well Primitive folk, Babylonians and Assyrians, Egyptians and Israelites, Chinese and Buddhists Hindus and Parsees, Greeks and Romans, bring their varied gifts of thought, learning, and material civilization, while, appropriately to countries and cities fundamentally Celtic, that heroic, spiritual tradition afforded closing scenes Yet such a selection from antiquity is obviously itself but the suggestion of fuller treatments Simplest and most childlike is the Masque of Early Man, with its anthropology presented as no mere study of skulls and implements but as the oldest of Miracle Plays, that of man's appearance and early nurture among kindly creatures, his struggles with dangerous ones, and his tragedies with his fellows So with the early history of civilizations, as in Mesopotamia and on the Nile with their mingled simplicity, sublimity, and tragedy, and on to modern or incipient renewals The Masque of Israel with little help beyond the Old Testament may be again presented, and with the childlike simplicity of the Middle Ages The Masque of India richly rewards us Easy, natural, vital to every school where classics are taught, are the Masques of Hellas and of Rome Of these, many treatments are possible each with appropriate presentment and music, at one time primitive or mythologic, again historic each rich in possibilities of selection and elaboration The Arthurian cycle is the fundamental British classic, beyond this area lie Ossianic and yet earlier hero and fairy tales, while the tradition of Columba is but one of innumerable saintships, of high spiritual adventure From simplest beginnings, then, of home, or playground, the Encyclopaedia Historica is the natural development Similarly with mediaeval and modern masques The Fall of Rome the stories of Haroun-al Raschid, Charlemagne, Alfred the Great, the beginnings of chivalry and of monasticism, the Crusades, the coming of the friars, the origin of universities—all lead up to the legitimate apotheosis of the Middle Ages

Again for the Renaissance its familiar pre cursors "gunpowder and printing", the Renaissance in Florence the story of Columbus, the Renaissance in France in the Netherlands and Germany in England in Scotland—all yield vivid scenes So the development of vernacular literatures, with their masterpieces and masters The beginnings of science the tales of the revival of learning (and of its decline) all justify their presentment So with the eighteenth century with its encyclopaedists and salons and with the contributions of each and every country of Europe, great and small P GEDDES

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PAINE, THOMAS (1737–1809) —A political writer and the son of a Norfolk staymaker After a varied life, which included many forms of employment, he settled in Philadelphia in 1774 He took up the cause of the Colonists, and published a pamphlet *Common Sense* (1776) in which he advocated complete independence, and which exercised a great influence on the minds of the Colonists At the battle of Trenton he fought as a private, and provided the battle cry "These are the times that try men s souls" in his *Crisis*, published just before to encourage the Americans

He was rewarded with a secretaryship and continued to hold official appointments until in 1787 he returned to England In 1791–1792 he published *The Rights of Man* in reply to Burke's *Reflections on the French Revolution* Millions of copies of this work were sold in spite of heavy penalties inflicted by the Government and Paine fled to France, where he became a deputy in the National Convention Madame de Staël relates that at the trial of Louis XVI, Paine proposed that the king should be offered an asylum in America This proposal brought about Paine's imprisonment and on his release he ceased to take an active part in politics In 1802 he returned to America About 1794 he had begun *The Age of Reason* in favour of Deism against both Atheism and Christianity, and the second and third parts were brought out between that time and 1807 This work alienated Washington and most of his American friends

PAINTERS IN WATER COLOURS, THE ROYAL SOCIETY OF —This Society was founded in November, 1804 at a meeting held at the house of Samuel Shelley at a time when water colour drawings were treated with scant courtesy at the Royal Academy and if executed by "outsiders' were commonly placed in the most unfavourable places in the worst lighted rooms At that time too no member of the Academy nor any candidate for election to that body could have his name on the roll of any other body of artists

At the outset the new Society was limited by its rules to a membership of twenty four but only sixteen were elected of whom ten had exhibited at the Royal Academy in 1803 The first exhibition of the Painters in Water Colours was held in April 1805, when 275 drawings were shown by the sixteen members The water colour painters as a whole, produced a great deal of fine work several of the early members contributing over 500 drawings each to the Society's exhibition The exhibitions at once became popular and were visited by many thousands of people so that the Society had to provide several new homes for itself before it was able in 1823 to move to its present premises in Pall Mall East These premises were bought in 1860 and extended and rebuilt in 1875 since which date there have been no material alterations

As the Society of Water Colour Painters was by its rules capable of little or no expansion a new Society called the "Associated Artists in Water Colours was founded in 1808 but lived for only four years The Society was reconstructed in 1812 to allow oil pictures to be exhibited with water colours, but resumed its first policy in 1821 Very slowly the public began to recognize the beauties of tinted drawings, which were apt to be considered as making a poor show beside the fine effects of oil-painting In 1836 Queen Adelaide and, in 1838 Queen Victoria visited the Gallery and later still Queen Alexandra and Princess Louise Duchess of Argyll became honorary members of the Society

From 1870 to 1890 Sir John Gilbert was president In 1872 he received the honour of knighthood, and in 1881 Queen Victoria conferred on the Society the prefix "Royal" signing the Members' diplomas for the first time in 1882

"The Water Colour Society of to-day maintains the tradition of the past and by electing into its ranks artists who can give utterance to the newest expressions of the art of the day makes entirely secure its mission to the future" (M. H Spielmann)

PALACE SCHOOLS.—The origin of this kind of school may be attributed to Charlemagne who counted on education to complete his work of empire-building and busied himself with many educational projects at a time when education was at a low ebb in Western Europe To carry out his aims he sent for Clement of Ireland then famous as a great teacher and persuaded him to remain in France as the master of a higher school of learning From 775 until his death in 818 Clement was regent of Charlemagne's Paris school In 782 Charlemagne induced Alcuin, then engaged in educational work at York to settle at the Court at Aachen where the emperor desired to have the education of his family and his nobles carried out under his own observation A revival had already begun and Alcuin found himself surrounded not only by the youthful members of the nobility he had been called upon to instruct but by older learners drawn sometimes from distant lands and including in their ranks some of the best scholars of the time Under his leadership the Palace School became what Charlemagne desired it to be the centre of knowledge and culture for his kingdom and even for the whole of Europe Charlemagne himself his queen Luitgard his sister Gisela his three sons and two daughters, became pupils of Alcuin and their example was quickly followed by the rest of the nobility Alcuin trained up a generation of educated men and women and at the same time inspired with his own enthusiasm for learning and teaching the talented youths who flocked to his school Before his death he had the satisfaction of seeing the young men trained in his Palace School engaged all over Europe in the work of teaching In imitation of the Palace School of Charlemagne many kings and nobles in the Middle Ages established schools attached formally or informally to their households

In 1423 the Italian humanist teacher Vittorino da Feltre (*q v*) (1378–1446) became tutor to the children of a prominent nobleman of Mantua and was assigned the use of a palace for his work Here he was able to gather round him as many as twenty pupils drawn from the families of nobles and other wealthy persons including members of both sexes A broad and liberal education was provided and studies were alternated with games and exercises About the same time a similar school was established by Guarino dei Guarini (*q v*) in the palace of Niccolo d Este in Ferrara Guarino had been appointed first as tutor to the son of Niccolo but afterwards took in both day pupils and boarders and attracted to Ferrara many distinguished pupils from all parts of Europe

PALI, THE TEACHING OF.—(See ORIENTAL EDUCATION IN GREAT BRITAIN)

PALSGRAVE, JOHN (*d* 1534) —He was born and at first educated in London and later went to Corpus Christi College Cambridge and to the University of Paris where he learnt French He became a priest and chaplain to Henry VIII who appointed him tutor to his sister the Princess Mary He taught her French before her marriage and then accompanied her to France At her request, the living of Egylsfeld, in Durham was given to him in 1515 He subsequently studied Greek and

Latin at Louvain and then became tutor to the young Duke of Richmond, natural son of Henry VIII, to whom he taught Greek and Latin He was helped by Cranmer and Sir Thomas More, and in 1533 became rector of St Dunstan's in the East His chief work was *Lesclaircissement de la Langue Française* (1530), a kind of dictionary for the use of Englishmen desiring a knowledge of the French language It was one of the earliest attempts to explain the rules of French grammar At present it is valuable as containing one of the best collections of obsolete English words and phrases, and is valuable to the student of English literature between the times of Chaucer and Wyatt

PANGENESIS.—(See ACQUIRED CHARACTERS)

PAPER TEARING, CUTTING, FOLDING, AND MODELLING, HOW TO TEACH—Young children love to tear fold and crumple paper and in their happy fashion endow it with life In school this liking for paper work can be made to serve a real educational purpose and originality and initiative can be trained thereby

Paper Tearing. This appeals to the destructive instinct but may be constructive if judiciously directed It is taken with the youngest children as a preliminary to paper cutting

1 TEARING INTO STRIPS The thinner the paper the better the result Fold the paper in various widths according to the objects to be made indiscriminate tearing should never be permitted Hold the larger piece firmly in the left hand and with the right gently tear the paper along the crease Arrange the strips to form objects such as railway lines fences gates ladders signals straight-line furniture and capital letters thus correlating broad line and mass drawing with paper work They may also be woven into mats to show the principle of weaving

Take a square and fold it into quarters Pinch out semicircular pieces with finger and thumb On opening out a pattern is seen The circular pieces torn out may be pasted to form a design or used as stuffing for a doll's cushion Develop ments of the circular tear are the double (dumb-bell) heart and elliptical tears

2 FREE TEARING Grade the objects from easy outlines to more difficult ones The correct form must be torn in one attempt no subsequent trimming of edges being allowed this makes the child careful The part torn out and the paper from which it is torn should exactly correspond

Paper Cutting Paper cutting follows naturally and directly from paper tearing, and the children proceed from the haphazard snippings of undirected effort to the organized co-operation of individuals working for some common end As training in form cutting can hardly be surpassed, and, though in the more difficult exercises hectographed outlines may be given to young children yet the educational value of the free unaided effort is much superior, even if the result is not so artistic One great merit of paper cutting is the home interest which it implies The silhouette, because of its vivid contrast and bold relief, appeals strongly to children

First practise cutting up newspaper columns and cutting out simple pictures Then give blank papers, and teach strip cutting by means of a folded margin As soon as possible, apply strip cutting to a definite end, the width and length of a strip being decided by each individual (*e.g* a ladder requires narrower strips than a table) Encourage initiative by asking for different objects (*e g* chair, table, fence, gate, window)

White paper mounted on grey or brown (or *vice versâ*) gives a pleasing tone Where it seems advisable to make them more realistic, the child should colour his own cuttings, thus receiving a better training than by the use of coloured papers Thin paper should be used, and, to prevent accidents, scissors with rounded points for the "tinies" For mounting Gloy or vegetable glue may be used as an adhesive Object cutting should be graded to give the children a sense of proportion The following are easily cut from a square leaving a minimum of waste shield, leaf, tent, fireplace, basket bee hive kennel horseshoe apple, plum Oblong objects are bell clock trumpet doll kite, oak leaf comb hand mirror, feeding-trough fish, straw hat, teapot tumbler For symmetrical objects the paper may be folded for the first time, but subsequent cuttings must be free, or the value of the training is diminished Vase cutting, with folded paper gives scope for originality Dictated cutting is useful in this connection Free cutting should be a direct copy of the object or of a card-board outline model pinned up on the blackboard Banners luggage labels, shields hoops, watches, spades spoons racquets fans, leaves brushes, bellows, knives, padlocks keys, axes, hammers, scissors provide useful exercises

CO OPERATIVE WORK One of the most valuable applications of free cutting is to co-operative work Nature lessons history geography stories, and other oral subjects provide scope for co operative pictures The parts of a picture must be bold in outline and true in perspective they are divided among the class and the best cuttings are taken for mounting or groups of children may complete a picture themselves

Paper Folding This is a natural preliminary to paper modelling and admirably illustrates the earlier stages of arithmetic and geometry Begin with a square of about 6 in side, obtained from an oblong by folding A simple progressive course is the following (1) Book-cover, tunnel, roof, shelf, (2) window handkerchief, (3) boat, (4) house, (5) kite (6) open envelope (7) sealed envelope, (8) flower vase, (9) crown Other progressive courses may be arranged on a similar basis

Paper Modelling A graded course is necessary to give mastery over material, but it should be suggestive rather than finite An exercise bearing on the model but calling for individual ideas should be asked for in conjunction with each lesson Each child should have a chequered book for working plans dotted lines indicating folds and heavy lines cuts Fairly stout paper should be used, especially for the larger models Modelling requires exactness, and the pupil can assess his own work if the model is badly constructed, the parts will not fit Exact work is a corrective to too much free work After the working plans of a few models have been obtained, the pupil should work independently

The easier models are based on the square divided into sixteen smaller squares, all the folds being on the same side of the paper

MODELS (1) *Square Box basis* Bed, sofa, chair, basket tray cupboard

(2) *Oblong Box basis* " Oblong basket, clock, carriage, cradle, tray, bridge

(3) *Barn basis* Barn, cottage, trough shop
(4) *Cube basis* Chair, arm-chair, market-basket table rabbit hutch

Miscellaneous models constructed on similar lines are easily made

To make them up use any adhesive or even lily pins, though these are not advisable for young children Thicker paper and thin cardboard gradually lead on to cardboard modelling

It is sometimes said that paper modelling is too mechanical but after a certain skill has been gained the models can be varied to suit particular needs Co operative work is very well adapted to modelling (*e g* an Indian encampment containing wigwams of various sizes canoes cradles moccasins quivers, and arrows may be constructed)

J E. T

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PARACELSUS.—(See CHEMISTRY, HISTORICAL DEVELOPMENT OF)

PARALLEL INDUCTION — (See ACQUIRED CHARACTERS)

PARAPHRASING, HOW TO TEACH —This may be one of the most valuable exercises in our earlier studies of literature and yet may be one of the most mischievous We are dealing with great thoughts and high expression, and must be reverent and our pupils must cultivate the appreciative mental attitude towards rare literary merit in the regard with which they treat such examples of excellence as are set before them To carve and interchange and entwist and entangle throughout will lose the greater in getting the less A facility in words or in the making of sentences or in the power of interpreting condensed or lofty expression is not of such importance as the growth of a finer literary taste The teacher is everything here he will feel a becoming humility before the artistry of Shakespeare, Wordsworth, Shelley, Coleridge Tennyson or our best prose writers and will make his pupils see that change is for the worse The paraphrase should confirm and not unsettle a right admiration

Apart from the teacher's personality the position should be safeguarded by proper (*a*) selection of passages for treatment and (*b*) outlook and purpose in the exercise itself

(*a*) Frequently passages will be selected of the very best quality to be examined and explained and re-expressed—admittedly with loss of force and beauty yet with a conscientious trying to do what one can More often it will be correct to paraphrase passages of a lower level of excellence as though within the range of our own capacity of full understanding Prose must come as well as poetry, and will have the advantage of itself offering a natural and straightforward expression This will mean a consequent ease of treatment by reason of its better comprehension but a particular difficulty—valuable in this connection—of change of word and phrase without the resource, as in the case of poetry of change of construction and the reduction of the abstract and the metaphorical

(*b*) The immediate purpose of paraphrasing is to express the meaning of the original with the maximum change in word phrase and construction But the meaning of the original is the cardinal condition and change for the sake of change is to be avoided Caution here is necessary *Synonyms* are perilous If two words mean the same thing one will soon take on variation or drop out of use As a point of school practice, frequent oral exercise is of advantage, the teacher intervening and expounding

A E L

PARENTHOOD, EDUCATION FOR —In 1861, Herbert Spencer published a great protest against the educational system of his time in that whilst educating for everything else it wholly ignored the most important duty and responsibility of all which is parenthood More than half a century later the omission which he condemned and deplored is almost as flagrant and as disastrous as ever Meanwhile ever since 1876 the birth rate has been falling amongst all but the mentally defective not least because the ideal of worthy parenthood as a personal privilege and a social and racial duty has been absent from the scheme of concepts constituting the spiritual part of that environment the provision of which is what we call education

The real reason for our failure lies in the inherent difficulties of the subject and I explicitly disclaim the assumption that I can solve a problem so complex and hard Here we can only attempt to consider the principles of the matter

By education for parenthood or eugenic education we must not mean merely instruction in for instance, the science of infant nutrition or puericulture nor in the elementary physiology and psychology of reproduction nor in the main principles of genetics or the science of heredity nor in the modes of infection or intoxication and personal and racial—or as they might appropriately be called dysgenesic—consequences of such agents as syphilis gonorrhoea alcohol and lead which may be named racial poisons Each of these subjects is clearly part of education for parenthood, and there are more which should be included in any complete curriculum of the subject Clearly our first difficulty will be to see the subject whole

The Great Need. Consider, for instance, instruction in motherhood, such as is now admirably directed by the National Association for the Prevention of Infant Mortality, and the Welfare of Infancy (Secretary Miss Halford 4 Tavistock Square W C 1) Such a volume as *Mothercraft*, for which that Association is responsible, is now serving for instruction in the practice of motherhood such as is urgently needed in all classes of society It would be the worst of folly to decry all and any efforts, such as the establishment of schools for mothers classes in hygiene, which may diminish the maternal ignorance—a natural condition of our intelligent species as compared with, for instance the instinctive bee—which is at all times a chief source of the perennial slaughter

and damage of infancy But such instruction is only a necessary instrument, or rather, one among several necessary instruments, of complete education for parenthood

If education be [as I have elsewhere defined it] "the provision of an environment" the object of which is in Spencer s phrase, "to prepare us for complete living", and if parenthood either *in propriâ persond* or as foster parenthood, the parental attitude towards the next generation, be part of complete living then it is evident that our education for parenthood must not merely concern itself say in the case of a girl with the care of her baby but must have already justified itself when she was choosing the baby s father In all times and places women s primal and supreme function is, or should be, that of choosing the fathers of the future (see the writer s *Woman and Womanhood*, 1912) This great idea should be recognized, implicitly and explicitly in the education of every girl She is or may be, partly responsible for the future of mankind She herself—mind and body—is holy, for she is the temple of the life of this world to come She must honour and care for herself accordingly and this twofold aspect of her present and future duty, in caring for herself and in choosing her co-creator of the future must be instilled into her mind with the solemnity, the sanctity and the authoritative sanction of a religious dogma The faithful assiduity the variety of method the earnestness and perseverance with which in the past, the mysteries of religion were instilled into the young, these must be rivalled and surpassed in educating for parenthood which will be an essential part of the religious education of the future The exalted and exact writings of Ellen Key need only be named for their illumination and elucidation of what we may call a eugenic feminism thus recog nizing the racial function of woman as Nature s supreme organ of the future And as for the girl, so also for the boy who has, and is, as hard a problem for himself and the educator as she

How the Need May be Met Education for parenthood [as I conceive it and would state its claims] is evidently far too great a thing for any one person or even for any one profession to compass It requires and when its importance is realized it will obtain the co-operation of all who are in any way responsible for youth As I have said and repeated during many past years "Four great classes of persons have this duty laid upon their shoulders—the parents the teachers the ministers of religion and the doctors Each of these four groups of persons has its own special responsibility and opportunity, and its own special duty accordingly Education for parenthood will be achieved, and the future of civilization will be assured on that day when these four classes learn to work hand in hand, in sympathetic and organized combination, without jealousy, with mutual respect, in constant consultation for the common end"

Hitherto each of these four classes has signally and disastrously failed in its duty Every day, many young lives are ruined for ever, many infants are killed or blinded or condemned to imbecility, diseases are spread, the ideal and idea of marriage are outraged and profaned through our common failure in our evident duty to our juniors.

I take this opportunity for urging yet again, as hitherto in vain, the organization of a national conference, to which the best possible representatives of each of the four classes of persons responsible shall be summoned in order at least to make a sound beginning with the practice of education for parenthood The parent who knows what it is to love and be loved, the teacher who sees the uses of botany and zoology in preparation of the young mind, the doctor who knows something of the laws of heredity and of disease the representative of religion who fights Mammon and Bacchus and Priapus the unholy trinity of our civilization—these together might achieve a creative synthesis that would henceforth save our nation's adolescence which is her future parenthood, which is her future C W S

PARENTS' DUTIES TO THEIR CHILDREN.—These duties fall under the heads of discipline and nourishment The discipline is that of the habits of good life—order, neatness, accuracy, punctuality, kindness courtesy, swift obedience, and the like Discipline includes also ordered activities, such as gymnastics, dancing, games, and swimming, as well as sensory training, which adds greatly to the enjoyment of life

The nourishment of the mind is fully as important a duty as that of the body No doubt school authorities are the agents of parents in this matter, but parents are not permitted to make over any duty to other hands however capable They must know what their children require and how their demands can be met The carelessness of parents in this respect is disastrous to the cause of education Parents and teachers alike should recognize that children must also educate *themselves* that it is necessary for them to undertake seriously the function of nourishing their own minds But nature has provided them with a great desire for knowledge and with the power of unflagging attention, imagination judgment, reason, act on mental pabulum without voluntary effort on a child's part, much as the digestive organs act in the assimilation of food

The proper alternation of rest (sleep, quiet occupations), exercise (physical drill, dancing, games, etc), and change from one occupation or subject of study to another after a sufficient period, are also of great importance

Most parents are aware that the most vital spiritual sustenance for their children comes by means of religion and that their chief endeavour should be to make known to them their Heavenly Father Christ their Saviour and the Holy Spirit—the Guide and Director of their lives C M M.

PARENTS' NATIONAL EDUCATIONAL UNION, THE —This was founded in 1887 by Miss Charlotte M Mason, and the principles of its educational philosophy are set forth at length in her five volumes of the *Home Education Series*

The Union arose "in response to a demand from thoughtful parents" and aims at giving opportunities for the study of educational problems, and a meeting-ground for intercourse between parents, teachers, and all who are interested in education Special stress is laid on the meaning of the word "education"—not instruction only, but the development of the whole nature on the principle that "Character is everything"

The work of the Union is carried on by a central council, with offices at 26 Victoria Street, London, S W 1, and there are upwards of forty branches in various parts of the country

All the local branches are pledged to the *central principles* that (*a*) a religious basis of work shall be maintained, (*b*) the series of addresses and other means employed by the Union shall be so arranged as to deal with education under four heads—physical, mental, moral, spiritual, and (*c*) that arrangements concerning lectures etc, shall be made with a view to the convenience of fathers as well as mothers and of parents of all classes

The objects of the Union are (1) To assist parents to understand the best principles and methods of education especially in regard to the formation of habits and character (2) to create a better public opinion on the subject of the training of children and to collect and make known the best information and experience on the subject, (3) to afford to parents opportunities of co operation and consultation, and to stimulate their interest and enthusiasm by meetings (4) to secure greater unity and continuity of education by harmonizing home and school training

In furtherance of these principles the local branches hold a number of meetings during a winter session at which lectures are given on subjects in harmony with the objects of the Union

The Union publishes as its official journal *The Parents Review* and each member subscribing not less than ten shillings annually is entitled to a free copy as published The editor is Miss C M Mason who contributes to its columns as well as to the pages of numerous books and pamphlets on education published by the Union

The P N E U is represented at many conferences on education and kindred matters and holds its own annual conferences for four days in London and other large towns

The House of Education An important part of the work of the P N E U is carried on at The House of Education, a secondary training college at Ambleside founded in 1891 and under the management of Miss Charlotte M Mason assisted by a staff of ladies resident and non-resident The watchword of this institution is " For the Children s sake ', and its object is to provide for women a special training in the knowledge and the principles that belong to their peculiar work *the bringing up of children* Candidates for admission must have had a sound education and are trained to become (*a*) Primary governesses for teaching boys and girls up to 10 years of age or (*b*) secondary governesses qualified to teach pupils from 10 to 17 years of age

The subjects of instruction at the college comprise psychology ethics history and philosophy of education, practice of education, teaching of languages, teaching of mathematics, Nature lore, teaching of voice production singing and the piano art, arts and crafts

Students enter in January and the course extends over two years

The certificate awarded to a successful student at the end of the training, guarantees that the holder possesses practical skill in teaching suitable for one of the two grades indicated above The class of certificate gained by students depends on the report of the examiners of whom the chief is always an eminent professor of education

The Parents' Union School Attached to the House of Education and under the same principal, is the Parents' Union School for children of 6 years and upwards This " school " is really a system for helping parents whose children are taught at home by mother or governess The school discovers as far as possible by preliminary tests the capabilities of the proposed pupil and then provides a programme of work testing the pupil at the end of each term

There are many schools in England where the Union methods are carried out, and their work is tested by the Parents' Union School examiners In some of these schools the principal teachers are old students of the House of Education

To assist mothers in teaching their own children the Union has arranged a mothers educational course to cover three years' reading The first year s work covers the principles and methods of physical, moral mental and religious training of children, and includes the knowledge necessary to give them first ideas of the natural world The work is similar, but more advanced in the two succeeding years Examinations are held twice a year and a fee of one guinea is charged for the course The books of the Home Education Series are specially prepared to aid students in this course

PARENTS' LEAGUE, THE.—(See EDUCATION BILL OF WALTER RUNCIMAN)

PARENTS, THE RELATIONS BETWEEN TEACHERS AND—The teacher is the parents' " other self ", and, when a child is committed to a teacher's care the parent delegates to the teacher the right of control over the child The origin of this delegated power lies no doubt in the presumption that the views and wishes of teacher and parent upon the child's interest and welfare are identical Broadly speaking the relationship of parent and teacher with respect to the child is governed in the absence of any special contract almost entirely by this presumed delegation

As between the parent and the teacher individually relations are controlled either by statute or contract In the case of public elementary schools and to some extent of all schools under the Board of Education's control statutory enactments regulate the position of the parties Under the Elementary Education Act of 1876 a parent is required to cause his child to receive efficient instruction in reading writing, and arithmetic [39 & 40 Vict, c 79 Sec 4] and local education authorities under their by laws may require parents to cause their children to attend school between the ages of 5 and 15 unless there is a reasonable excuse for exemption [33 & 34 Vict c 75 Sec 74 63 & 64 Vict c 53 Sec 6 (1) and 8 & 9 Geo V c 39 sec 8]

Although parents must, as a rule, take the school as they find it, and accept the curriculum laid down, there is an important exception in the subject of religious instruction In elementary schools provided by local authorities no religious catechism or formulary distinctive of any particular denomination may be taught, and in higher schools and colleges only otherwise than at the expense of the authority But in all schools and colleges a parent may withdraw his child from the religious instruction given, without thereby forfeiting any school or college advantages [33 & 34 Vict, c 75 Secs 7 and 14, and 2 Edw VII, c 42 Sec 4] A parent, therefore, who desires that his child shall not receive religious instruction should give notice to the teacher to that effect, but, notwithstanding this exemption the child must still attend school during the hours provided for by the by laws and may receive instruction in some other subject during the time set apart for religious instruction A parent

has no power to withdraw the child from school on any day on which the school is open, unless it be a day set apart for religious observance In practice, a note of excuse to the teacher is generally accepted on reasonable cause shown, but in strict legality, a parent may be proceeded against if his child is absent on any occasion in contravention of the by-laws

In endowed schools, and schools under the Charitable Trusts Act, the provisions of the trusts, so far as these are applicable as between teachers and parents govern the relations dealt with always having regard to the fact that the general law of delegation fully applies Where a contract subsists between parents and teachers as is usually the case in private schools the relations are regulated by the contract, which may be either expressed in terms or implied from the circumstances Thus, if a parent sends his child to school on the terms of a prospectus with which he has been supplied he will be bound by those terms and may be required to observe the regulations set out as to fees notice of removal and any other matters proper to the contract Generally a full term s notice of removal is stipulated for In boarding schools it is the duty of the teacher to provide proper instruction nutri ment and care for the child He must in this case perform most of a parent s duties, and he may be liable for any negligence in carrying out his duties

A A T

PARIS, HISTORY AND WORK OF THE UNIVERSITY OF —The University of Paris may be said to be at the same time the oldest and the youngest university in the world Its present form dates only from 1896 but one must go back to the twelfth century and perhaps to the eleventh to find its beginnings

Originally there had been formed in the *Cité* around Notre Dame a certain number of schools in which chiefly young "clerks" or candidates for ecclesiastical preferments were taught This teaching included on the one hand grammar and rhetoric on the other arithmetic music geometry, and astronomy Later theology and canon law were added and finally medicine

These schools were conducted under the authority and supervision of the Bishop of Paris It was he or his delegate, the Chancellor of Notre Dame who gave permission for the opening of a school and it was he who granted the *licentia docendi* which formed the sole right to teach

The fame of these schools soon spread all over France and beyond its boundaries The number of scholars grew by thousands they came from different parts of France and from different countries of Europe so much so that, finding themselves cramped for room in the *Cité* they crossed the water, and, keeping always to the left bank of the Seine established themselves on the hill of Ste Geneviève There two masters, William de Champeaux and Abelard by their eloquence and the brilliance of their lessons, attracted and inspired crowds

This migration constituted an act of emancipation from the control of the Bishop The schools became conscious of the community of their interests and little by little masters and scholars combined together first according to their native countries afterwards according to the nature of their studies Groups and corporations were established and the outcome of these groups and corporations was the University of Paris

The University was sanctioned by two acts of authority, the one royal, the other papal these bestowed on it privileges that rendered it an autonomous body

In 1200 in consequence of an affray which took place between students and townspeople, Philip Augustus, by charter, removed the University from the jurisdiction of the civil authorities and placed it under the disciplinary control of the Church

Yet the University continued to depend on the authority of the Bishop both in its civil and in its academic life and the Bishop had many times shown himself severe and tyrannous The University of Paris, therefore, approached the Pope In 1215 Cardinal Robert de Courson brought it the papal bull that formed it into an ecclesiastical corporation The right of combining for joint action was recognized as also was that of possessing a seal It was placed under the immediate authority of the Holy See

Released from the power of the police and the civil authorities by the royal act and relieved of the yoke of the Bishop by that of the Pope, the University of Paris soon testified to its independence and extended it yet it remained an appanage of the Church Its body of students consisted mainly of clerks' and even its private seal, the sign of its independence, was essentially ecclesiastical

But between the young University, justly proud of the privileges which it had won by main force and the Bishop who saw his authority sensibly diminished a conflict was inevitable, and broke out in 1219 and lasted until 1222 The University triumphed The disciplinary jurisdiction of the University remained in the hands of the Bishop but he was deprived of the right of conferring the degree of *maître* and of granting teaching licences The necessary qualifications for an instructor were to be in future decided by a committee of professors In short the conferring of degrees ceased to belong to the Bishop

Then independent of both King and Bishop, the University of Paris took thought with regard to its internal organization

Out of the groupings determined by the affinities of the various disciplines emerged the University, and by concentration these groupings became the faculties

There were four faculties the Faculty of Arts (the most important by reason of the number both of its masters and of its students), the Faculty of Canon Law, the Faculty of Medicine, and the Faculty of Theology

The Faculty of Arts in consequence of the great number of its students and their diverse origin, soon found itself crystallizing into other sets, each consisting of masters and students from the same country or district These were the *nations* There were likewise four of them the nation of Normandy, the nation of Picardy, the nation of England and the nation of France

Each nation had its own elected *proctor* Each faculty had its own *dean*, also elected Their charge was to watch over the interests the former of his nation the latter of his faculty After 1245, the proctors made themselves subordinate, voluntarily, to a rector, who was elected for a very short period of office To begin with, then, the rector was

only the head of the four nations but his authority quickly grew and came to exceed that of the deans In a short time the whole University had only one head—the rector

The meetings of the faculties and of the nations took place in a monastery or in the refectory of a convent The masters taught where they would and where they could in private houses as well as in public thoroughfares As for the University it held its assemblies in a church, generally in the Mathurins or St Julian the Poor

"From St Julian the Poor on the occasion of the annual festival of the students the interminable procession of the University with the rector at the head mounted on a mule set out to go to St Denis to buy parchments

The colleges also were created in the thirteenth century They were fairly numerous To begin with they were particularly the charitable houses established for poor students which were transformed gradually into houses of instruction by reason of the fact that the masters, especially those belonging to the faculty of arts came and established themselves there

The most celebrated of these colleges was founded in 1257 by Robert de Sorbon master of theology and confessor of the King to accommodate 'sixteen poor masters of arts who are candidates for the degree of doctor of theology It became, in fact the faculty of theology and acquired such importance that for long its name stood for the University of Paris itself

The authority of the masters of the University was consolidated and the fame of their teaching spread far and wide The University was the sole dispenser of learning it was a State within the State King and Pope alike reckoned with it The thirteenth fourteenth and fifteenth centuries were, for the University of Paris a period of triumph

Curiously the Renaissance marked the beginning of its decline Various causes explain this decline First, the growth of the power of the Crown

After 1445, the University of Paris ceased to be subject to the jurisdiction of the Church A decree of Charles VII subjected it to the common law and the jurisdiction of Parliament Soon after at the instance of Louis XI, the right of delivering or withholding its lectures at will was taken away from it by the Pope A little later under Henri II as the result of a scuffle which took place on the *Pré aux Clercs* between townsmen police and students it had to offer an apology and make amends to the King

At last, towards the end of the sixteenth century Henri IV declared that the right of instructing the French youth was most important for national welfare Proceeding to reorganize the University he withdrew this privilege from the Church in order to assume it himself Henceforth the head of the University was no longer the Pope, but the King

There is a stronger reason to explain the decay of the University namely the hostility it displayed to the process of intellectual evolution which was taking place

Modern History From the Renaissance dates the advent of humanism, the elevation to a position of honour of the literature of antiquity The Renaissance passed over the University and left it unmoved This failure to grasp realities brought upon the University emphatic censures and protests Against the attacks of Rabelais, the satires of Montaigne, the reforms that appeared with Luther, the University could only plead her scholasticism—the scholasticism out of which she had come and whereon she had lived Canon law remained her sole study although the ranks of her students had become much modified no longer did they consist exclusively of "clerks" or future "clerks" intended for the Church, they included also sons of nobles and the middle classes anxious to receive instruction in different branches of knowledge

Then it was that Francis I founded the Collège de France, showing by this creation that the teaching given by the University of Paris was inadequate and that as the University persisted in disregarding the new thoughts and intellectual aspirations Greek and Latin literature philosophy science, and medicine must be taught outside her walls

The Collège de France proved a formidable competitor to the University, nor was it the only one Already other schools had been established in France (especially at Orleans, Reims, and Montpellier) and abroad competing successfully with Paris There were also the successful colleges founded by the Jesuits on lines largely humanist and the colleges of the Oratorians and the schools of Port Royal which by the modernity of their methods as well as by the worth of their masters, helped educational progress

The reorganization of the University of Paris effected by Henri IV in 1598 and 1600 did not greatly modify the statutes of the University It was directed that 'in the teaching of the faculty of theology nothing should be opposed to the rights and dignity of the King and of the kingdom of France The faculty of law preserved its theological character however the *Institutes of Justinian* were introduced into the teaching In medicine there was no change In the faculty of arts Latin was made obligatory classical authors of the best period were studied and Greek also was given a place though of secondary importance after the classics came philosophy and science But as a matter of fact this reorganization did not give the University a new lease of life

In the seventeenth century Richelieu ordered the rebuilding and extension of the Sorbonne Mazarin founded the College of the Four Nations and in 1675 Louis XIV ordered that in the faculty of law alongside the Canon Law there should be instruction in Roman Civil Law and also in French Statute and Common Law

In the eighteenth century, with the most amazing inability to recognize its own interests the University failed to respond to the best influences In vain Rollin gave advice In vain did outside voices utter new words the whole world heard them except the University of Paris And yet these voices were those of Montesquieu J J Rousseau, d Alembert, Diderot and Voltaire The spirit of the Revolution passed over it without stirring it

Throughout, the University promulgated the scholasticism of the Middle Ages And yet in 1762 a chance of salvation was offered to it The Jesuits had just been expelled from France The University was given the Collège Louis le Grand which had belonged to them It was unable or did not know how to turn it to account

It lost one after another its privileges of independence and autonomy A decree of the Constituent Assembly, dated 22nd December 1789, put it

under the supervision of the departmental administration This right of possessing property was taken away from it by the laws of 2nd November 1789 and 22nd April 1790 in virtue of which the property of societies and religious communities was transferred to the nation On 25th May, 1791, a new law attached it to the Ministry of the Interior Finally a decree of the National Convention dated 15th September 1793 decided 'All the public schools and the faculties of theology medicine arts, and law are suppressed throughout the Republic

All that remained of the University of Paris was the memory of the vivid light it threw over all the Middle Ages

Recognizing education as of national concern Napoleon proceeded to reorganize it generally A law of 10th May 1806 supplemented by the decrees of 17th March 1808 and 15th November 1811 founded the Imperial University in which was centralized public instruction of all grades

At the head of the University was a Grand Master assisted by a University Council and the whole empire was divided into academies, each governed by a rector assisted by an Academic Council

Thus Paris became the seat of an academy, and was endowed with the five new faculties of law medicine science literature and Catholic theology Degrees were restored—the baccalaureate the licence and the doctorate They were State degrees and the State alone conferred them But there was no bond of union between these faculties they had nothing in common

The Imperial University next became the University of France and higher education seemed to be born anew In the faculty of letters the lectures of three young masters—Guizot Cousin, and Villemain—were crowded After the Revolution of July 1830 these same men became ministers of public instruction

Under the Second Empire higher education further advanced Victor Durny founded the *École des Hautes Études* and in spite of the wretched material equipment great discoveries were made in the laboratories of Pasteur Claude Bernard and Saint-Claire Deville After 1870 public opinion demanded the re establishment of higher education The third Republic has the honour of having made the necessary effort for the foundation of these great centres of learning and intellectual life —the universities of which Guizot and Cousin had dreamed For twenty years the work was carried on enthusiastically and confidently by ministers such as Jules Ferry René Goblet, Berthelot Raymond Poincaré and León Bourgeois There was keen obstinate opposition Nevertheless there rose the new Sorbonne the new school of pharmacy, the new faculty of law, and the new faculty of medicine The City of Paris and the Government rivalled each other in generosity and provided the necessary funds which amounted to nearly £4 000,000 The decrees of 25th July and 28th December 1885 were the corner-stones

The General Council of the Faculties was set up, presided over by the rector assisted by the deans and two delegates from each faculty, its function is to discuss all questions bearing on the common interests of the faculties The latter are invested with civil personality, and so are qualified to receive subsidies and to use them to establish new studies, laboratories, libraries and collections and for the benefit of the students

In 1889, the Finance Act settled the revenues of the individual faculties In 1893, another Finance Act incorporated the faculties, invested the corporation with civil personality, and gave it a settled income

The decree of 21st July, 1897, set up the University Council The vice-rector is president, and it is composed of the deans of faculty, the principal of the School of Pharmacy, and twelve elective members two from each faculty and two from the Higher School of Pharmacy The principal and the vice-principal of the Higher Normal School are also co opted as members

Having formed the Council, the same decree defined its powers It enumerated the various affairs of which the council takes cognizance, and which, according to their nature, it passes resolutions on, discusses, or makes recommendations for

It gave the council the right of appointment to the lectureships established according to law out of the endowment of the University It gave it also the right of conferring exclusively scientific degrees and diplomas Finally, being legally the jurisdictional authority of the University, the council determines the procedure to be followed in matters of dispute and discipline

At the time when the Act of 10th July, 1896 was passed, the University of Paris possessed one faculty more than it has to-day viz, the faculty of theology The act that separated Church and State led to the abolition of this faculty, but in 1903 the Higher Normal School which till then had been a distinct foundation designed for the training of secondary schoolmasters was made part of the University It retained however, under the authority of the vice rector of the Academy of Paris its own revenue and its own administration

Present-day Constitution. In consequence of these changes, the University of Paris includes now the following institutions the four faculties of law medicine, science, and letters the Higher School of Pharmacy and the Higher Normal School

The principal seat of the University of Paris is the new Sorbonne There the central offices, the vice rector s room and the University council rooms are to be found There too, the faculties of letters and science and the special library attached to them called the University Library, are located

The other institutions forming part of the University of Paris viz the faculty of law, the faculty of medicine the Higher School of Pharmacy, and the Higher Normal School occupy special buildings in proximity to the Sorbonne

From its foundation, the Faculty of Law has been installed in the building erected by Soufflot towards the end of the eighteenth century in the Place Ste Geneviève To day the Faculty of Law occupies the whole quadrilateral included between the Place du Panthéon, the Rue Cujas, the Rue St Jacques, and the Rue Soufflot

The Faculty of Medicine still occupies the grounds of the Old Academy of Surgery and the ancient convent of the Grey Friars It has been extended on the same site It is made up of two enormous buildings abutting on the Rue de l'École-de-Médecine In one is the administrative organization of the faculty, as well as the great theatre, the council chamber, the Orfila Museum,

the library, etc In the other, of recent construction, has been installed the Practical School of Anatomy

The Higher School of Pharmacy has its quarters at 4 Avenue de l'Observatoire Originally located on the premises of the College of Pharmacy it was in 1881 transferred to a new building on a site taken from the Luxembourg It comprises spacious buildings appropriated to general purposes as well as a library, a gallery of collections laboratories, theatres and a botanical garden

The Higher Normal School has always been in the Rue d Ulm

Much of the work done in the Faculty of Science has had on account of its great development to find a home outside the Sorbonne In this way the Institute of Industrial Chemistry the Laboratory of Applied Mechanics, the School of Preparation for the Certificate in Physics Chemistry and Natural Science (P C N) and the work of the professorship of Biological Evolution, have all been housed in separate and distinct quarters Mention must also be made of the Institute of Radium in the Rue St Jacques by the side of which the Geographical Institute is now being built and no doubt the Institute of the History of Art will soon follow

But the University of Paris extends far beyond the boundaries of the city The observatory at Nice which Raphael Bischoffsheim gave belongs to the University It possesses also stations of observation and experiment and laboratories whose special character require their establishment in certain definite parts of France There are for instance, the marine laboratories at Roscoff (Finistère), Banyulo sur Mer (Pyrénées Orientales) and Wimereax (Pas de Calais) the experimental station of vegetable physiology at Fontainebleau, and the Aerotechnical Institute at St Cyr l École

University students omitting those who attend merely the public lectures, may be divided into three classes—

1 Those who matriculate with a view to (i) taking a State degree which will qualify them to practise a profession (ii) as entrance to a public career (iii) for business or profession

2 Those who wish to carry their previous studies to a higher development without seeking a degree or who wish their proficiency to be tested and recognized by a university diploma

3 For private research work with the object of contributing to scientific progress

Preparation for degrees and certificates having been arranged by the Government through the medium of open lectures and classes reserved for internal students the University sought to drive home the lessons by means of a sound system of instruction calculated to familiarize the students with methods of scientific research this was to be given in institutes, seminaries, workshops and laboratories

The Act of 10th July, 1896 assigned to the University the fees payable for classes, matriculation library and practical work which had previously been appropriated by the Government Moreover the Act imposed on the Government the obligation of handing over towards foundation expenses (such as the cost of classes laboratories heating lighting, etc), a considerable sum to be divided by the council among the various establishments But the Act specified that the resources by which the University benefited could be appropriated only to the following objects cost of laboratories, library, and collections, building and maintenance of buildings, creation of new courses of study, and undertakings in the interests of students

It improved and enlarged the equipment of its faculties by means of scientific laboratories, archaeological collections collections of modern art, geographical museums, etc Schools were organized in the faculties of law and letters Professorships, courses of lectures and post-graduate courses, fellowships (*emplois d agrégés*), laboratory and workshop directorships and tutorships were established in rapid succession Scholarships too were founded in the Faculty of Law and at the School of Pharmacy

In the revenue is included a grant from the Russian Government (£1 200 a year) for courses for Russian students a grant from the Roumanian Government (£480 a year) for the working expenses of a school of the Roumanian language and a grant from the Greek Government for a course in Modern Greek language and literature

Another source of income was also opened for the University and its faculties—viz gifts and legacies They are numerous and considerable

M Louis Liard Vice Rector of the Academy of Paris President of the University Council has paid publicly the homage that was justly the due of all the benefactors of the University

Every year the Society of the Friends of the University by means of gifts subscriptions and other contributions helps the University to award foreign travelling scholarships to certain students and to supply the needs of certain laboratories

The University teaching staff consists of regular professors associate professors assistant professors and lecturers In the faculties of law and medicine and in the Higher School of Pharmacy there are no lecturers The fellows (*agrégés*) with the regular professors make up the list of the teaching staff The regular professors, associate professors fellows, assistant professors and lecturers number 355 They are divided as follows—

Faculty of	Law	49
,,	Medicine	119
	Science	76
	Letters	89
Higher School of Pharmacy		22
	Total	355

The library of the University of Paris is certainly one of the richest in the world The most recent stock taking gives for the four divisions the figure of 936 000 volumes not counting periodicals, incunabula and manuscripts

The Higher Normal School possesses a private library amounting to at least 250 000 volumes

The decree of 21st July 1897 issued to confirm the Act of 10th July 1896 gave the universities full powers to create scientific degrees The University of Paris has taken considerable advantage of this privilege With the approval of the permanent committee of the Higher Council of Public Instruction it has created in the course of a few years a number of degrees some technical others purely scientific as follows—

Doctorate of the University of Paris in the faculties of law, medicine science letters, and pharmacy University diploma of Pharmacist Diploma in Medical Jurisprudence Diploma of Colonial Physician Diploma of Industrial Chemist,

Certificate in Criminology Certificate in Financial and Administrative Science (Economics)

For foreigners the University has established a certificate in French studies and a diploma of university studies (Letters)

The war interrupted neither the academic nor the scientific life of the University Its open lectures continued to assemble large audiences and most of its laboratories were in full swing

On 15th July, 1914 the University of Paris numbered 17,441 students 3 408 of whom were foreigners

The University of Paris has made it a point of honour to maintain close touch with foreign universities The universities of the United Kingdom Cambridge Edinburgh Glasgow, London and Oxford the University of Brussels, the universities of Cracow Moscow and Petrograd the universities of Bologna and Rome the University of Geneva that of Madrid those of Christiania and Upsala even the American universities Princeton Yale, Laval (Montreal) on the occasions of congregations jubilees and other commemorations have more than once received a visit from representatives of the University of Paris

In 1907 the University of Paris sent an important deputation of its members to bear to the University of London its cordial salutations, and the University of London returned the visit the following year

A short time afterwards an agreement was effected between the two universities in virtue of which English students are enabled to spend one year of their degree course in Paris and French students one year in London The University of Paris also exchanges professors regularly with American universities especially Harvard University The Columbia University of New York has even founded a chair of French which every year is occupied for a semester (six months) by a professor of the University of Paris nominated by the University Council

In a few years the University of Paris under its new form has gained the esteem and respect of the whole world The prizes for higher mathematics founded by the King of Sweden were awarded to Professors Henry Poincare and Paul Appell the Nobel Prize was awarded successively to those eminent savants Pierre Curie Moissan and Lippmann the Nobel Prize was also awarded to Louis Renault professor in the faculty of law the acknowledged authority on Public International Law

Such is all too brief a summary of the history of the University of Paris such in broad outline is a sketch of the scientific work advancing human knowledge and civilization A G

PARKER, ARCHBISHOP (1504–1575) —This great Elizabethan Archbishop of Canterbury (1559–1575) is notable in the history of English education for the famous Article IV of his Articles of Visitation of 1567 This Article dealt exhaustively with the conditions of English education and asked the following questions—

' (1) Whether your grammar school be well ordered ?

' (2) Whether the number of children thereof be furnished ?

" (3) How many wanteth ?

" (4) And by whose default ?

" (5) Whether they be diligently and godly brought up in the fear of God and wholesome doctrine ?

" (6) Whether any of them have been received for money or reward and by whom ?

" (7) Whether the statutes foundations, and other ordinances touching the same grammar school, and schoolmaster and the scholars thereof, or any other having doing or interest therein, be kept ?

' (8) By whom it is not observed, or by whose fault ?

" And the like in all points you shall inquire and present of your choristers and master "

The answers to these searching interrogatories have not as yet been discovered The discovery would throw great light on the early history of Elizabethan education Question 6 seems to be an attempt to enforce the early doctrine that education should be free In Archbishop Parker's Visitation Articles of 1569 the further questions (Art XXII) were asked " Whether your schoolmasters be of a sincere religion, and be diligent in teaching and bringing up of youth ? Whether they teach any other grammar than such as is appointed by the Queen's Majesty's injunction annexed to the same or not ? '

J E G DE M

PARKER, FRANCIS WAYLAND (1837–1902) — He was born at Bedford New Hampshire, and spent his early manhood from 16 to 21 as a district teacher in New England schools After fighting in the Civil War he returned to teaching and from 1875 to 1880 was superintendent of schools at Quincy Mass In 1880 he became supervisor of schools at Boston and from 1883 to 1899 was principal of the Cook County Normal School, near Chicago Of all his schools he greatly increased the popularity and raised the attendance In 1896 he was also appointed Principal of the Chicago Normal School He held advanced views on education and spent the years 1872 to 1875 studying in Germany and observing German systems As a teacher he was fond of children and possessed a great power of grasping their point of view He did much to improve the courses of study in American elementary schools and wrote numerous books for teachers on methods of teaching and study

PARKES, E A. — (See ROYAL SANITARY INSTITUTE, THE)

PARR, SAMUEL (1747–1825) —Son of a surgeon at Harrow Middlesex, and educated at Harrow School and Emmanuel College Cambridge In 1767 he left Cambridge and became an assistant master at Harrow School On the death of his head master in 1771, he hoped to succeed him, but being disappointed he opened a school of his own in the adjoining village of Stanmore and kept it going for five years He was then head master of Colchester Grammar School from 1776 to 1778, and of Norwich School from 1778 to 1786 He afterwards held a number of clerical appointments, including a prebendal stall at St Paul's Cathedral, and during the last thirty years of his life was vicar of Hatton near Warwick During his lifetime he had the reputation of being an accomplished Latin scholar and conversationalist His complete works form eight large volumes, but contain little worthy of preservation His Latin was of Ciceronian style and purity His conversations

at the tables of statesmen, wits, and divines have been compared to those of Dr Johnson, and were collected into two volumes by E H Barker (1828–1829) but contain nothing to justify the reputation which he once had

PARSING.—(See ENGLISH GRAMMAR, THE TEACHING OF)

PARSONS (more correctly **Persons**), **ROBERT** — He was a Jesuit priest born at Nether Stowey Somerset, in 1546 died at Rome in 1610 He was educated at Oxford (1562–1568) where he became a tutor, but was forced to resign in 1574 on account of his strong Catholic leanings He went abroad entered the Catholic Church and became a Jesuit in 1575 He suggested the English Mission to the Jesuit Society and after being temporary rector he took part in the Mission from June, 1580, to August, 1581, preaching confessing, arranging tours, writing books and undergoing many hard ships and dangers His chief companion, Campion was captured but Parsons escaped to France where he was prominently engaged in political affairs and became the champion of Mary Queen of Scots, and of the persecuted Catholics in England In 1582 he founded at Eu the first English Catholic boys' school since the Reformation, and in 1594 a larger institution at St Omers which after a long and romantic history was transferred in 1794 to Stonyhurst Hall in Lancashire By a strange coincidence, the Hall had been founded in the same year as St Omers At first a Jesuit classical school, Stonyhurst College has moved with the times, and is now a modern public school and prepares its pupils for the learned professions and for the Army It is the largest Catholic college in England Father Parsons was rector of St Omers from its foundation until his death

PASSION.—The word is used in two senses (1) to represent a strong uncontrolled emotion (2) to describe a strong permanent emotional disposition connected with a certain object

In the first sense we speak of "flying into a passion '—" bursting into a passion of tears '—" giving a passionate answer" Here the dominant factor is that of uncontrolled emotion and it is accompanied by the usual physical concomitants of heightened colour quick breathing rapidity of circulation which are always present in any violent emotional disturbance The lack of self control evident in passion may be due to lack of will power or to the violence of the emotional disturbance at the moment

In the second sense we speak of a "passion for music" Here the word implies a strong emotional disposition towards a certain object idea or group of ideas "Passion ' used in this way is not a simple sudden, emotional state, but represents a complex of various emotions built up round a central idea The term "sentiment" is used by more modern writers to represent this meaning of passion A sentimental or emotional disposition tends to be permanent, and may at times become so absorbing as to exclude all other mental tendencies It is not confined to any one emotion but is built up from several simple emotions Thus the love or passion for music combines the tender emotion with the emotion of awe or veneration and the aesthetic recognition of beauty The word "passion" is sometimes used to imply sensual pleasure alone

M J R

PATON, JOHN BROWN.—Born at Galston, Ayr, 17th December, 1830, and died 26th January, 1911 His influence was manifold but it had one pervading object common to all his activities he desired to cast out the attractions of base things by arousing interest in the best through suitable education As long as energy was applied to some work or study by which character might be strengthened and the world improved he was comparatively indifferent as to the particular direction His first important effort grew out of his dissatisfaction with the inadequate training of many for the ministerial profession and the founding of the Nottingham Institute, of which he was Principal for thirty five years, was due to this anxiety In 1870 he took a middle course towards Mr Forster s Bill, and urged the adoption of the British School policy, undenominational religious teaching He was disappointed in the result but soon turned his energetic spirit in the direction of university extension It was the practical nature of the Nottingham application in 1873 which may be said to have caused the University of Cambridge to entertain the scheme In Nottingham this scheme developed into a university college, and when Extension Lectures were found to be useful to the leisured rather than to the working classes this college was guided in the direction of commercial and technical training of which work the high schools and continuation classes were to become feeders and helpers The interests of girls were not forgotten

It is to Dr Paton's undying honour that he led the van in the uprising against the sordid almost squalid night school, and brought the idea of brightness interest, and even recreation into the effort to teach He had been struck with German efficiency in this matter but repelled by its cruelty He therefore determined to set on foot a scheme equally thorough but attractive not repellent His work has been largely absorbed by the authorities but the living value of the founder s work lies in the fact that the continuation school is only on the threshold of its great career

In the Lingfield venture he helped to explore the still more difficult problem of agriculture though the actual object of the effort was the saving of human débris in the slums In all these efforts, the foundation policy was always cropping out the wish to save the citizen from misery and ruin by the presentation to him of intelligent interests leading to intellectual pleasures and pursuits It is easy, therefore to see how his labour among workers led to proposals for pleasures and recreations saner than the operative had grown accustomed to and to the birth of the Co operative Holidays Association And we may trace to his healthy horror of debased reading the inception of the National Home Reading Union (*q v*)

Dr Paton s attitude towards Mr Balfour's Act and Mr Birrell's amending one was characterized by the same desire that actuated his whole life—a desire which seems so difficult to accomplish—the retention of religious influence in education without dogma and creed

G R

PATRIOTISM, THE TEACHING OF — Can patriotism be taught ? The first impulse of most Englishmen would be to answer this question with an emphatic negative, or even to answer it by asking another—"Can religion be taught ?" For, in our examination ridden world, a subject that can

be taught seems to mean one that can be assessed in marks The ancient world did not have to "teach" patriotism, on the other hand, the Germans have done so, it was the schoolmaster who won for them the war of 1870 they tell us but also we in turn feel it was the schoolmaster from professor down to usher, that made the war of 1914 and its peculiar war code There is also a great body of sentiment in England that has a horror of militarism and Jingoism and is apt to espy these tendencies in any reference to the Union Jack or any encouragement of cadet corps There is above all, an English dread of effusiveness or "gush" a dread of even seeming to wear the heart upon the sleeve or to "make a fool of oneself' by any exhibition of feeling

But any one who has been in contact with the wage-earners who form the mass of our population must have been struck with their growth in conscious patriotism in the later stage of the European War In the first months they were bewildered by the magnitude of the event by the break-up of their familiar world by the conflict of voices about the causes of the war by the instinct to find scapegoats foreign policy historical causation, the forces of nationality and of absolutism were to them dim, incomprehensible they asked what it was all about why we could not have kept out of it one often heard the suggestion that the whole thing was engineered by armament rings, that it was an international capitalist conspiracy or a plot to bring in industrial conscription that the workers had no stake in the country that they would be no worse off under Germans that British and German working men had no quarrels Then their minds were purged and cleared by many things the rally of Canadians and Australians the horrors of Belgium the experiences of men back from the Front the torpedoing of the *Lusitania* the use of poison gas Thus the great majority of them became the most resolute class in the country the most prepared for thorough measures Patriotism in this case was taught But it was there, latent all the time So that, after all it seems we had been teaching it only in our English way indirectly fortuitously it was like character a sort of by-product of our educational institutions or rather of our social life our history and our literature But we cannot trust to by products or fortunate accidents in the world that has suddenly opened like an abyss before us a world challenged by a new and terrific force discovered in nationality, by the realization of what war means, and by the tremendous call that reconstruction makes upon us

The very unconsciousness of our patriotism shown in the slowness with which it came to realize even the primary need of enlistment, is a danger we were only saved by the sea which made us an island, and henceforth the sea is replaced by the air which knows no islands and no frontiers

Citizenship. It is certain that there are many things that our youth will have to be taught henceforth One such thing is citizenship the sense of what it means to belong to a great community with such a history and literature behind it This sense must be built up out of a local patriotism, the history traditions, characteristics, of one's native race and shire and borough afford a fine material for teachers to work on It must be built up out of corporate life which is so fine a thing in our colleges and public schools, in our Army and Navy and which should now be fostered in our elementary and secondary schools That it is only waiting to be developed is proved by many boys' clubs, and already the instinct of comradeship and the habit of co-operation are deeply rooted in English clubs and societies, trade unions, guilds, and churches Englishmen receive willingly an appeal to continuity, they recognize their duty to set their teeth and see a war through, as their grandsires did against Napoleon so that they may hand on a heritage undiminished to their own children

Young people, too, begin to feel something of the obligations that have come upon the generation now growing up to take up the tasks of those that have fallen to help with the wounded and crippled the widows and orphans, and to contribute their share to the work of reparation and reconstruction It would be a great mistake to make no call upon them they love to be trusted to be summoned to responsibilities to feel they are of use We have seen this in France War indeed, if we apply its lessons aright, is a mighty teacher Even before, there were many signs of the dawn of a new era in education and now, more than at any time in our past, men's minds are open to a new and more generous conception of what is real education Some idealists used to deprecate national patriotism as inimical to a wider international solidarity, but we see now that this must be built upon that Were not the rank and file in the trenches almost too ready to respect the best qualities of an enemy—courage, discipline efficiency? Left to themselves, they would have had little hate and no cruelty English patriotism would be in little danger of becoming the German type—machine made, submissive to authority servile to a formula, we cannot imagine it convincing itself that Kultur must stamp out other forms and that the sinking of the *Lusitania* and the treatment of Belgium were duties, or imagine it singing a Hymn of Hate We outgrew that phase of national arrogance with the defeat of the Armada Our English defect is rather a complacent neglect and undervaluing of the foreigner if our patriotism were made more self-conscious it would become more open-minded, more teachable It would steer between that of the United States, which is effusive, almost flamboyant and that of Germany, with its curious, narrow idealism which is at bottom so materialistic, for it accepted a military yoke as the only means to greatness and argued that our Empire was a "fraud" because it was not based on force It is impossible to imagine England submitting to "Prussianism' of this sort as a small section in the Labour world professes to fear Cromwell said "Men must know what they are fighting for and must love what they know This need not degenerate into idolatry of the State or a State "mobilising" of education conscience and religion as in Prussia There is some mean between this extreme and the other extreme, which had been allowed to prevail in our country under the anarchical Spencerian doctrine of "Man *versus* the State" and the "gospel of individual self-interest", just as there must have been some mean between their Potsdam uniformity and our 340 independent Education Committees Hitherto we have all been shy of the word patriotism just as the masses were shy of the word Empire

Method. Some relevant facts may be put as "notes" We should not talk of "creating" interest or imagination, the spirit of co-operation or of patriotic pride, these are there already, eager

to be fed and to be set to work There is much still we have to learn from the German education its methodical thoroughness, its instruction in languages, its belief in knowledge, its exaltation of the teaching profession German defects the overlong hours the overloading of the memory the repression of independence, the lack of humour, the encouragement of national megalomania, the divorce of intellect from morality—these are not dangers which England will easily fall into We have ceased to believe, for the economic world in a harmony which was to evolve itself out of chaos automatically the same assumption has now to be eliminated from the other spheres of national life It was a schoolmaster who when asked what reforms he would propose first, said he would begin by reforming the British parent But even this is not so Utopian now as it seemed two years ago It is notable that from our reformatories 377 boys from our industrial schools 1 721 amounting to the whole output of three years went on service in the Great War and of them many won distinctions We need never despair of our material it is responsive enough to the right methods After all that can be said about boys the training of girls remains the important thing Nations depend on the mothers of the race and the fundamental duties of improving the physique saving infant life acquiring practical arts appeal at once to girls and the teaching of temperance thrift, and patriotism is, to them the obvious thing to do

Further Suggestions The books we need must be written by flesh and blood men not officials as such nor booksellers' hacks It is a task worthy of our greatest writers

School lessons might include a Nelson day a Wellington day an Empire day, like the St David's Day initiated in Welsh schools other lessons could be on the lives of great pioneers, the best work of great men of letters the services of great statesmen and reformers History should begin with biographies More use might be made of maps models exhibits we are too bookish in our teaching Scholars should be taken on educational tours (it is done in Spain!) to historic sites, places of beauty industrial centres The modern reforms of medical inspection proper feeding, manual training development of brain by hand and eye—these should be treated as the training necessary for citizens of an Empire which covers one quarter of the world and which must stand or fall by its citizens' character and conduct Surely even the outlines of the needed social reforms in sanitation housing agricultural production the application of science etc might be put before the young in a way to stimulate them without being unduly 'subversive or "revolutionary'

Is it too bold to suggest two other points? Patriotism stands on the home and on the school The home however imperfectly teaches co operation sacrifice The school has hitherto mainly relied on competition the appeal to self advancement But the modern world is becoming more and more inter dependent geographically politically and in economics as in medical and other sciences in law and other branches of learning and in religious and other thought Despite the war now all the more after it the future must lie in this direction How can schools teach co operation and the spirit of mutuality? The answer must be again *Solvitur ambulando* Service is taught by serving the sense of membership by the activities of membership The self-governing school republics, here and in the United States are full of suggestion and encouragement Already the chief influences of Eton and Winchester, Rugby and Harrow are from their being pocket commonwealths The principle should be extended to all secondary schools, and even in the elementary schools the meaning and working of a borough or county of a nation and an empire, might be exhibited by living models or dramatic representations

Again, more might be done by practical methods Botany land measures and indeed much of the needed geometry and arithmetic can be better grasped in school gardens than on blackboards in rural areas rural economics and practice are not only useful subjects but can be made the vehicle of much accurate observation and clear thinking, in industrial areas the teaching can be related to the mine the forge and the loom This would remove the reproach that 'a school life which begins at 3 and ends at 13 is to the child a positive evil' The child would learn things by doing them and he would be doing the very things which are most real to him This is incipient citizenship Is not a new Irish patriotism being built up by native agricultural co operation?

All this it may be said implies a school age continued far beyond 13 and an elevation of teachers to the standard now reached by one in a hundred This is true and not the least of the benefits that will come from facing this question is that it forces us to face the educational problem and the whole problem of social reform Our future citizens must know what they are to fight for and must have reason to love what they know

A L SMITH

PAULSEN, FRIEDRICH —No writer has presented the history of German education in a more attractive light than Friedrich Paulsen formerly Professor of Philosophy in the University of Berlin The most important of his earlier works is his *Geschichte des gelehrten Unterrichts vom Ausgang des Mittelalters bis auf die Gegenwart* (1896) A more condensed work *Das deutsche Bildungswesen in seiner geschichtlichen Entwicklung* (1906) appeared in 1908 in English as *German Education Past and Present* (trans T Lorenz) Paulsen holds that whereas in ancient times the individual was educated primarily for the State and in the Middle Ages for the Church the modern tendency is to educate him mainly in his own interest He accepts as inevitable and advantageous the triumph of the State over the Church in the control of education a result already foreshadowed by the Renaissance Though Paulsen welcomes this change as progressive he approves of regular *historical* religious instruction in schools Christianity having affected the world so profoundly that no man can afford to be ignorant of its teaching and history But it is not the duty of the school to provide convictions which should come later as the result of independent thought The last stages of the struggle between traditional and liberal instruction are now being fought out over the question of the place of the classics in education Paulsen holds that Latin and Greek are not essential to general culture, they have their value which will become the more apparent the more they cease to be generally compulsory but the object claimed for them can be achieved just as well if not better by other studies (*e g* the mother-tongue or modern foreign languages)

Paulsen is best known as an educational writer by *Die deutschen Universitäten und das Universitätsstudium*, 1902 (trans 1906 by F Thilly and W W Elwang as *The German Universities and University Study*) He approves of the healthy rivalry promoted by the decentralization of the universities in the various German States and would oppose any attempt at Imperial control On the other hand the migration of students from one university to another stimulates a fruitful interaction of ideas and preserves a general consciousness of the community of interests He approves of the appointment of professors by the State which leaves them however the great privilege of *Lehrfreiheit* (freedom of teaching) within the limits of the subjects assigned to them This *Lehrfreiheit* does not prevail in the Roman Catholic theological faculties nor can the State allow a Social Democrat (*i e* a professed enemy) to be its paid servant The corresponding advantage enjoyed by the student *Lernfreiheit* (freedom of learning) though often abused is valuable as a school of experience With regard to politics the professor should cultivate an attitude of theoretical indifference at the same time developing his own views Nor is it the business of the student to make politics but rather to study the claims of all parties In short it is the business of the university to help the State by building up on the basis of accurate knowledge a constructive policy in every department of human activity G W

PAVIA, THE UNIVERSITY OF—There was a school at Pavia in 825 supposed to owe its foundation to Charlemagne On this stock a famous school of law especially Lombard law was grafted by Lanfranc which received a charter as a *studium* in 1361 from the Emperor Charles IV with faculties of jurisprudence medicine philosophy and arts In 1398 Giovanni Galeazzo Visconti Duke of Milan refounded the old university of Piacenza the earliest in Italy and the *studium* of Pavia was transferred to that city Galeazzo died in 1402 and by 1404 his university had ceased to exist In 1412 however the university was revived at Pavia and it became a celebrated seat of learning throughout the Middle Ages being especially renowned as a school of medicine The most brilliant professors were attracted to its lecture-rooms by the liberality of the salaries offered There are anatomical and natural history museums which were founded by Spallanzini in 1772 the library comprising upwards of 185 000 volumes dates from the same year and contains some of the ashes of Columbus who was a student of the University The illustrious Volta made his earliest experiments in electricity at Pavia

Among the activities of the University are a botanic garden founded in 1774 and a school of art The present buildings were begun by Lodovico il Moro in 1490 Attached to the University are two colleges for poor scholars the Collegio Borromeo founded by S Carlo in 1563 and the Collegio Ghislieri founded by Pope Pius V six years later Pavia thus to some extent resembles Oxford and Cambridge in having subsidiary residential hostels

The University which is a Royal University, that is is under Government control being supervised and directed by the Ministry of Public Instruction has faculties of philosophy and letters, mathematical physical and natural science medicine and surgery, and law, besides schools of pharmacy and engineering There are more than sixty professors lecturers, and other teachers, and the number of students is over 1 000 In 1850 there were as many as 1 800 students

PAYMENT BY RESULTS.—When Mr Robert Lowe collected the Minutes of the Committee of Council on Education into a "Code" in 1860, he introduced payment by results in order to diminish the amount paid towards the cost of education from Imperial sources but he urged that his plan would tend to the improvement of the education given Under this plan to use Mr Lowe's own words, 'a particular child will be examined and the grant in his case will depend upon this one issue" Payment by results continued to be the method of distributing public grants until 1897 when annual examination gave way to inspection (See also LOWE [VISCOUNT SHERBROOKE], ROBERT)

PAYNE, JOSEPH (1808–1896)—An educational leader of the nineteenth century for over thirty years a schoolmaster after having received a slight elementary education he earned his own living, and was substantially self taught In 1830, whilst an assistant teacher he wrote his account of Jacotot's System of teaching This pamphlet induced Mrs David Fletcher to organize a small class of children to whom Payne became tutor This small class developed into an important private school called the Denmark Hill Grammar School In 1837 Payne married Miss Dyer daughter of the Secretary to the Baptist Missionary Society This lady was herself a schoolmistress and in 1845, Payne established the Mansion House School for Boys at Leatherhead, and continued it successfully till 1863 when he retired to 4 Kildare Gardens, Bayswater From 1863 to 1876 Payne devoted himself to the study exposition and propagation of educational principles and methods In this work he was aided by his wife To Payne, school teaching was a highly intellectual pursuit Experiment and discovery gave a new impetus to both theory and practice He was convinced that teachers laboured under great disadvantages through lack of attention to the principles and methods underlying their work He became a pioneer in attempting to bring teachers to a higher conception of their work and to stimulate the inquiry into the possibility of educational "science" But his main idea was clear To Payne, as Mr Quick has said, the teacher is not one who 'tells,' but one who sets the learner's mind to work", and, to him this involved "an insight into the working of the pupil's mind a power of calling its activities into play and a knowledge how to render these results permanent'

The College of Preceptors was empowered by charter in 1849, to apply its surplus funds in endowing training schools and in the establishment of lectureships in the theory and practice of education In 1872 this object was carried into effect, and Joseph Payne was appointed by that College as the first Professor of Education in England In 1873 and 1874 nearly 140 students of both sexes attended Payne's lectures, and the experiment of his appointment was highly justified

Amongst other directions in which his educational energy flowed, none was more earnest than his advocacy of the higher education of women He took an active interest in the Women's Educational Union and the Girls' Public Day School



Padua University

PLATE LXX

Trust (*q.v.*). The later developments of the national educational system, including the establishment of a Registration Council, owe much of their original impetus to Payne's zealous efforts to inspire a professional feeling amongst teachers, grounded upon the demand for a knowledge of the principles underlying the practice of teaching. The chief lectures and essays were collected into two volumes, entitled the *Works of Joseph Payne*, edited by his son, Dr. J. F. Payne, in 1883. Pages 11–12 contain a list of Joseph Payne's chief published works, pamphlets, and papers. Illustrations of width of educational interest and enterprise are his *Visit to German Schools*, 1874; and his article on "The Higher Education of the United States" in the *British Quarterly Review* of 1870. In the same review in 1867 he wrote an article on "Eton," in which he criticized adversely the "boasted education" given at the school. Outside his educational activities, he was deeply interested in linguistic studies, and in 1873–1874 was Chairman of the Council of the Philological Society.

With regard to Mr. Payne's characteristics as an educationist, and particularly his stimulative power as a lecturer on educational principles, Mrs. Bryant, D.Sc., Litt.D., the Head Mistress of the North London Collegiate School, kindly sends us her impressions of Mr. Payne's lectures, which she attended.

Impressions of Payne as a Lecturer. "It must have been in the last year of his life that I attended Professor Payne's lectures on 'Education' at the College of Preceptors. When Miss Buss accepted my services to teach mathematics, she sent me also to Professor Payne; and whatever educational science I now possess, the clue to it was put into my hands by him. His lectures had that characteristic of combined originality, lucidity, and suggestiveness which is the fruit of intuitive gift in a strong, sincere nature. His sympathetic discussion of his students' essays after the lecture was a model illustration of the principles he expounded. At the basis of his methodology, as I remember it, lay the foundation principle that, in its ultimate analysis, 'all teaching is self-teaching,' whence it follows that the primary function of the teacher is to induce in the learner, by sympathetic insight and suggestion, the self-teaching attitude appropriate to the subject in hand. With this master clue to method in their minds, his students were led on to study the learner as normally self-teacher in an interesting world, and to develop ways of teaching particular subjects accordingly." F. W.

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Dictionary of National Biography, Vol. XLIV (pp. 112–113).

PEACE, THE EDUCATIONAL ASPECTS OF INTERNATIONAL.—1. Admitted evidences of Law and Order in the Universe, in experiences historic, religious, personal, alike postulate the existence of a Law Giver—a Deus *in* Machina.

2. The Jewish Elohim appears at once a single, dual and plural God, manifesting through many opposite yet complementary processes. He is thus at once rest and activity, reservoir and supply, God and Word, Brahm and Brahma, father and mother, c.f., the fire and thorns of Moses. This postulates a continuous ebb and flow, giving and receiving; perpetual life and motion involving a certainty of continuity: in ITSELF, a security, a harmony—PEACE.

3. This duality of condition and process may be expressed as negative and positive, where both are good, and therefore permanent and true. Evil is also positive and negative, but is neither permanent nor true.

4. Education is essential to the study and production of International Peace.

True positive international peace has never yet existed in this aeon, but about the year A.D. I, the Roman world was officially "At Peace."[1] The Temple of Janus was closed. Since then war has become in obedience to evolutionary law increasingly malevolent. Since 1856 actual fighting is recorded in every year but one until recently about four-fifths of earth's dwellers were officially "At War." When "absolute" war reaches its climax it must wane.

In the Great War, outside the actual arena of hostilities the war spirit spread everywhere like a thick negative cloud—ignoring rights of neutrals, seeking *contra naturam* to abolish national and individual liberty and conscience, to make everyone positive for war—peace reduced towards its minimum became more definite, negatively among the neutrals, positively among a few idealists who adopted the extreme logical position of refusing absolutely any kind of war service. Some, as internationalists, sought only the common good, a few sought to be as positive for peace as was Jesus of Nazareth, in and by Whom they maintained that positive peace was supremely manifested. Since His day other units and groups paradoxically fighting for peace from various motives—religious, economic, socialistic—have carried on the struggle until the leavening of the world-lump had reached its pre-war stage when several nations had ceased to be positively martial. As negative international peace expanded, the law of ebb and flow compelled the war states to become more bellicose, and conflict became inevitable. We have experienced positive war triumphantly ascendant.

"I am the Fact," says War, "and I stand across the Path of Life. I am the Threat of Death and Extinction that has always walked beside Life, since Life began. There is nothing else and nothing more in human life until you have reckoned with Me." Thus does Mr. H. G. Wells portray war's appalling claim. His words constitute a warning and a challenge to all lovers of positive progressive education.

The ravaging of countries by hostile armies, starvation by blockade, race deterioration by death, wounds, or overstrain, conscription of fathers and teachers, all tell directly against child life, and sow a crop of dragon's teeth for the educationist to reap. Surely his highest duty is to teach the rising generation to *think aright*? If, on the contrary, he teaches it the lust of world-power and self-glorification, how best to destroy human life, instead of teaching it community of interest and the advantages of co-operation over conflict, he is surely teaching it to think wrongly.

We know that as war proceeds, the standard values of life and morality are lowered by familiarity and suggestion. Energy must be devoted to military work only, and to fostering the war spirit. Teaching power is reduced to a minimum, and one

[1] Merivale, *Romans under the Empire*, Vol. III, p. 40.

ceases to be surprised that those who deliberately educated young Germany for war regarded the teaching of hate as essential It was according to plan

Negative and Positive Peace Negative peace, as opposed to true positive peace though less cruel physically is morally little better than war Luxury and pleasure seeking become rampant A sense of irresponsibility permeates individuals and governments who pandering to personal party or sectional interests lose the power to govern themselves or others

When positive international peace does come its power for good will be immeasurable *Inter alia* it will realize—

1 The value of individuals and nations to each other

2 That a mutual and co operative study of productions and requirements—material economic and ethical—is essential to race progress

3 The international right to live and right to work —freedom of exchange over the world s water rail and airways

4 The establishment of international law and order on a broad basis with goodwill instead of fear as the ruling motive

5 The suppression of evil where evil is the absence of good the negation (positive) or ignorance (negative) of God the supreme and absolute reality

Possibility of International Peace As positive war is only possible by the multitude of its con scripts so international peace will only become possible as an increasing stream of men and women of all races grasp its tremendous potentialities and volunteer for service What are the alternatives? Peace or War Universal conscription and the utmost preparedness for destructive war or voluntary service for constructive peace unbearable taxation or a higher standard of comfort the balance of power or a commonwealth of nations There will be evolutionary stages but there is no *tertium quid* Humanity and civilization are alike doomed without *positive* peace

The educationist in all countries must realize this and when he does he will wield a responsibility big with the fate of unborn millions The key is in his hand In two generations by means of a deliberately specialized education the German people was schooled for world war and Japan turned from a feudal to an industrial state In two generations the civilized world could be educated for constructive progressive peace—a veritable *Pax Dei*

Ho then ! all you who love to teach still more all you who love the taught—all you true lovers of child life who realize its freshness keenness and impressionableness who vizualize the wealth of love and toil expended on the making of a generation—shall it not be your κτῆμα ἐις ἀεί (reward for ever) that you have done your utmost to free them from the horrors of war by working with heart and mind for the establishment of positive international peace ?

J P F

PEACHAM, HENRY (*c* 1576–1643) —The son of a rector of North Mymms Hertfordshire who at an early age became an accomplished classical scholar In 1597 he wrote *The Garden of Eloquence* which displayed his extensive knowledge of Latin He was educated at St Albans and entered Trinity College Cambridge but left the university in 1598 to become master of the free school at Wymondham in Norfolk He disliked the profession of school-master but took great interest in his pupils and in his teaching displayed great accomplishments far surpassing those of contemporary schoolmasters He was a master of English poetry, an accomplished musician and skilled in mathematics painting, drawing and engraving His first work was a practical treatise on art *Graphice or The most ancient and excellent art of Drawing and Limning in Water Colours* (1606) afterwards called *The Gentleman s Exercise* This book was illustrated with very neat pen and ink sketches each with a Latin subscript in verse At the end is a madrigal (words and music) entitled ' King James his quier " commencing ' Wake softly with singing Oriana sleeping In 1612 he published *Minerva Britanna*, a series of heroical devices and emblems In 1613 and 1614 he travelled in Holland France Italy, and Germany acting as tutor to the three sons of the Earl of Arundel and studying music On his return he devoted himself to literary pursuits under the patronage of the Earl of Dorset In 1622 he published his best known work *The Compleat Gentleman* fashioning him absolute in the most necessary and commendable qualities concerning minde and bodie that may be required in a noble gentleman In this work he reflects on the defective education of young English gentlemen and advises them to turn their attention to art and athletic exercises and gives a description of contemporary English efforts in art science and literature He also wrote political tracts small books for children, and social treatises on English life

PEASANT ART AND INDUSTRY, THE REVIVAL OF —Before a wonderful century " changed the face of civilization the word " Art " as a term which differentiated one kind of work from another was scarcely known Everything that was made was made beautifully no matter how humble its destination There was a harmony between human labour and Nature which exists no longer because the very conditions of modern manufacture are inimical to country life We feel instinctively that a lecture on wild birds and flowers would be more appreciated by an audience of factory hands than of farm hands not because the townsman really cares for these things more than the countryman but because he still regards them as symbols of an ideal life in pure air, sunshine and green fields

The aesthetic movement is a protest against the mechanicalization of life That aspect of it which we are to discuss now boldly challenges the economic principles on which our vast industrial system is based Peasant art and industry are incompatible with modern industrialism and their value from an educational point of view depends entirely on whether the industrial ideal or the peasant ideal is most conducive to true culture The official mind is of course tempted to incorporate some training in handicraft in its curriculum, because, in a mechanical age it says everybody should learn to use their hands but it will only patronize the revived activity so far as it will *extend* the use of machinery and no farther It will refuse to discuss its revival as an *alternative method of production* It ignores the ancient harmony and has invented a theory by which the claims of beauty and freedom shall be silenced by introducing chip carving into

elementary schools and establishing art workshops in industrial centres

Now if the revival of handicrafts has no deeper significance than to become the handmaid to machinery and to supply rich people with elegant electric fittings it is quite compatible with all the horrors of modern industrialism it is in fact *essential* to modern industrialism for if manufacturers themselves had to be satisfied with the results of their own manufacture they would I am sure soon cease to manufacture But if it means a revival of the peasant as well as of his arts and industries a very radical revolution has been set on foot for just as machinery ousted the peasant in the eighteenth and nineteenth centuries so he can only be reinstated by a corresponding desuetude of machinery The revival of peasant art and industry without reviving the peasant would be only a worthless affectation and the prospect of any kind of balance between clean country and manufacturing towns is absurd physically economically and morally

The Peasant Education may be defined as that which converts uncultured people into cultured ones In trying to connect this ideal with the Revival of Peasant Art and Industry we are met at the outset with the paradox that culture is almost exclusively associated with the town and coarseness with the country Most of the words which imply refinement—words like civilization politeness courtesy urbanity—betray an urban origin Only culture itself is redolent of the soil The peasant is a pagan the inhabitant of ordered fields (*paganus*) as much distinguished from the savage who lurks in the woods (*silvaticus*) and the heathen who camps on the heath as he is from the sophisticated sojourner in streets The peasant is really hedged in by conventions as strictly as his fields are The conventions of the village its arts and industries are as rigid as the conventions of Nature New ideas do not flourish there while tradition is as rampant as the wild rose The conventions of the town its arts and industries are only the conventions of fashion whose very obligation is to change

The first thing then to notice about the peasant is that novelty has no charm for him That is strange when novelty is as indispensable to the townsman as fresh water to cut blossoms This characteristic is echoed in his art as a fidelity to certain standards of taste which it is our object here to analyse

We shall only get to understand Peasant Art by realizing first of all that the distinction which exists in our own town bred minds between the artist and the artisan does not exist for the peasant The peasant does not understand our art His perception is limited by utilitarian conditions He is no sentimentalist He does not regret the disappearance of the picturesque cottage and the appearance of Paradise Row He will exchange his grandfather's clock for a modern timepiece without a pang if it will keep better time A well ploughed field a well thatched rick a well layered hedge a well clipped sheep—such are the pictures on which his eyes love to dwell If you could possibly make him grasp what you meant by a 'work of art and asked him to produce one he might point to the prim avenue of snapdragons and sweet williams leading to his gate but even then the flowers are merely the coloured selvage of the potatoes and cabbages behind His conception of that abstraction we call a 'picture would be the plan or map of a kitchen garden or farmyard and he is as innocent as Cimabue of perspective

It is important to grasp this primary fact because if peasant arts and industries are to be revived they can only be so from the peasant's point of view and not from the academic one It is the peasant who must teach us and not we the peasant

Peasant Art In the first place then peasant art is utilitarian and must not be separated from peasant industry that is to say from country life and agriculture That huge distinction between labour and leisure which industrialism has necessitated and on which so many modern utopias are built must be rejected The countryman's work is also his recreation Peasant art is only one aspect of peasant industry it is constructive before it is reflective If as Ruskin says all Art is Praise peasant art is the praise of peasant labour *It is the consciously happy method of making really necessary things* It is the worship of right labour and is lavish in its adoration At the Museum of Peasant Art at Haslemere are a quantity of things made by peasants for their own use furniture harness tools mangle boards cheese moulds etc etc which amply prove that before the blight of mechanical invention spread over the country Art was indigenous as the daisy The second characteristic of peasant art is what for want of a better word I must call its Realism The peasant makes models or plans of things instead of copies or pictures of them His object is to materialize as much as possible what he admires This realism is of that ingenuous kind which is akin to the purest form of mysticism for like all true mystics the peasant is a materialist and not a metaphysician Things to him are not only symbols of spirit—they are spirit Hence his art is as solid and tangible as he can make it He abominates blur and the mysticism which is only mistiness He is essentially a sculptor and when he uses colour he does so as a sculptor would—without chiaroscuro

Symbolism in Peasant Art But I have already slipped into what I should like to mark as the third distinguishing feature of peasant art—its intensely symbolical character By calling his art symbolical I do not mean that the peasant consciously uses signs to denote ideas I only mean that he decorates things he makes with images of things he loves His scope of symbols is consequently as unlimited as the Nature in which he lives and moves and has his being I have tried to show as a humble student of peasant art the difficulties that must attend any effort to introduce into our modern system of education any scheme of manual training based on habits of life and thought which are entirely opposed to our own Everything we do or make cannot help being the faithful expression of our state of mind Our present tendency is to become more and more intellectual and more and more dependent on the vagaries of machinery The peasant is instinctive in his mind and traditional in his manners We shall not acquire his mind or his manners by imitating his art We shall only emulate his art—if we want to—by acquiring his mind and manners but I fear nothing is further from our wishes We are too infatuated by machinery to notice its dangers and too puffed up by our science to see that in conquering the body of Nature we have lost her soul for by turning our fields into factories we have sacrificed the

faith which is the inspiration of all real art—that faith that believes the Kingdom of Heaven is at hand even at the door because if we lived in the country we had only to open the door to see it

G B

PEDAGOGIC INSTITUTE CHILE —(See CHILE THE EDUCATIONAL SYSTEM OF)

PEDANTRY —As defined in the *Century Dictionary* a pedant is a person who overrates erudition or lays undue stress on exact knowledge of detail or of trifles or who makes an undue or inappropriate display of learning Steele in *The Tatler* says pedantry proceeds from much reading and little understanding Swift in *Good Manners* says there is a pedantry in manners as in all arts and sciences and that properly it is the overrating any kind of knowledge we pretend to The word is derived from *paedogogus* (a teacher)

PEDRO PABLO —(See ABARCA Y BOLEA)

PEIRESC, NICOLAS CLAUDE FABRI DE —A native of Provence and of Italian descent educated at Avignon and at several universities became Doctor of Laws at Aix in 1604 and visited England in the *suite* of the French Ambassador He devoted himself to literary and antiquarian studies especially in the department of numismatics He carried on an extensive correspondence and left many valuable letters but no volume of general importance

PEKING, UNIVERSITY OF —(See CHINA EDUCATIONAL SYSTEM OF)

PEN —An instrument for writing with fluid ink The ancient Egyptians and Greeks wrote on parchment or papyrus with a reed pen Specimens of metal pens have been discovered in Pompeii Quills were in common use in Europe from the seventh century and the earliest metallic pens on record in England were made at Birmingham for Dr Priestley in 1780 James Perry began making steel pens at Manchester in 1819 and the Birmingham makers—Mason Mitchell and Gillott—began in the following decade Steel pens came into general use about 1830 and at present above 10 000 000 are made yearly in many thousands of different sizes and shapes An interesting modern development is the fountain pen in which a pen nib of gold often tipped with iridium draws its supply of ink from a reservoir carried in the holder

PENN, WILLIAM (1644-1718) —He was born in London and was the son of Admiral Penn While studying at Christ Church Oxford he was converted to Quakerism by the preaching of a disciple of George Fox He became very aggressive in his objections to the religious observances at Oxford and was expelled from the University In 1668 he was imprisoned in the Tower for writing *The Sandy Foundation Shaken* which attacked the doctrine of the Trinity While in prison he wrote *No Cross No Crown*—his most popular book He was again in prison in 1671 for a breach of the Conventicle Act and wrote four treatises in defence of toleration entitled *The Great Cause of Liberty of Conscience* In 1682 he sailed for America where he planned and named the city of Philadelphia and for two years governed on strictly Puritan principles the new colony of Pennsylvania From the first, the principle of toleration was established by law in this colony In England in 1686 he secured the liberation of many Nonconformists who had been imprisoned on account of their religious opinions A second period in America (1699–1701) enabled him to make regulations for improving the condition of natives and negroes

PENNSYLVANIA, THE COLLEGE OF —(See UNITED STATES COLLEGES AND UNIVERSITIES OF THE)

PENOLOGY —The history of punishments in education is of great practical importance to day when the whole question of repression as an educational force is in issue The significance of repression has been obscured perhaps too much in the present struggle to secure freedom in education The doctrine of freedom has however tended in some directions to become a doctrine of license as in the case of so called auto education and it is likely that there will be a reaction and that wisely devised repression by physical means will retain some place in education On the other hand the terrorism of children by means of rod and birch can have no place in future education The old tradition on the subject is full of lessons for the educationist In the schools of the Roman Empire discipline was enforced by means of the rod with terrible severity This tradition survived the Empire though it was at first modified by the Celtic respect for the age of adolescence The earliest English reference to education as such (apart from educational administration) is a Romano British or rather Welsh Canon of the mid sixth century dealing with the use of the rod which recurs in the *excerptiones Lgbercti* of 750 A D

Parvulus usque annos xv pro delicto corporali disciplina castigetur post hanc vero aetatem quicquid deliquerit vel si furatur retribuat seu etiam secundum legem exolvat Physical punishment ended at the age of 15 This limit was not maintained and through the middle ages when the Roman tradition of education was revived in its fullness punishment with the rod even increased in severity The Elizabethan educationists protested against the practice in vain and it survived and indeed still survives (though in a vastly modified form) in the great English schools which carry on the continuity of English and Roman education Yet the Renaissance had inveighed against the brutality of the schoolmaster and Montaigne compared the bloody stumps of birch and willow with classes strewn with green leaves and fine flowers With the opening of the nineteenth century the reaction of milder methods came with the new monitorial schools In the Borough Road School in 1827 punishment by ridicule took the place of the rod, and physical punishment though retained in all the English State aided schools throughout the nineteenth century and still retained has never played in them the part it has played in the great public schools In England to day it is still very generally felt in all schools that there must be in reserve in the background some administrative force to deal with special cases of insubordination, but it may be said with certainty that no teacher regards the rod as the prime or ultimate sanction in school life The English law has always permitted the parent and the schoolmaster as the

representative of the parent to administer reasonable physical punishment to the child and that rule of law remains but in fact less and less reliance is placed on this form of securing discipline obedience and respect In Germany physical punishment is allowed under restrictions in the elementary and the lower forms of the higher schools In France Italy and Belgium physical punishment is forbidden in all types of schools In many of the cities of the United States of America physical punishment in schools is forbidden while in other cities it is regarded as a measure of last resort and in many cases it is limited to male pupils

A not less important aspect of penology is the question of punishment of children for offences against the criminal law According to the English common law there is a conclusive presumption that children under the age of 7 years cannot do anything to make them liable to be punished by a criminal court In the case of children between the ages of 7 and 14 years there is a legal presumption of the same type but it is not conclusive and can be rebutted by evidence giving special proof of *mens rea* that is guilty knowledge of wrong doing Quite young children have been found guilty of capital offences and executed in pursuance of this rule but this could hardly happen to day In 1891 two boys aged 8 and 9 years respectively were tried at Liverpool for murder having drowned another boy in order to steal his clothes They were acquitted on the ground of infancy (*see* C S Kenny *Outlines of Criminal Law*) At the age of 14 an infant comes under full criminal responsibility Reformation of naughty children by means of special schools was adopted as a necessary method in the eighteenth century, and these voluntary efforts were recognized by the State youths being sent to such schools in place of transportation A State school of this type was sanctioned by Parliament in 1838 and was in part supported by Treasury grants In 1854 the first Reformatory Schools Act was passed and in the same year Feltham Industrial School was created by a private Act In 1856 parents were given the choice of the industrial or reformatory school to which their children should be sent and by a consolidating Act of 1866 ten years was fixed as the lower limit of age for these schools The age was raised to 12 years in 1893 and the upper limit was raised to 19 years Reformatory schools were and are always used for offenders against the law but since 1899 it has not been necessary that a child should have been previously imprisoned so that the question of age is the only real distinction between these schools and the industrial schools These latter schools some of which are day schools have proved a great success, though the necessity at all of such schools is a comment on past national neglect of education

Children's Courts The business of an educational system which deals with children from the age of 5 is so to form character as to overcome inherited and environmental tendency to crime This point of view is now generally recognized and in order to secure children from contagion in crime by association with criminals English children s courts are held in which only children are charged The methods of such courts have not given complete satisfaction since the children charged meet each other and very often the results are as bad as the meeting of children and adult criminals The proposal to form one central court in the metropolis for children has been strongly opposed by experienced magistrates There can be no doubt that there is a minute percentage of true criminals among children and it is necessary to ascertain and segregate this very small but very dangerous section of the community The vast majority of children charged with offences are not however really possessed of *mens rea* and the problem is to secure for such children an environment which will protect them from themselves and from the causes which have brought them before the police court

The Prevention of Crime Right education in the right surroundings is the only solution and this method is being applied in many parts of the world On the other hand social reform is attacking the problem by the education of parents by the betterment of housing conditions and by the creation of reasonable forms of recreation for both adults and children alike Fundamentally human nature is good not bad and penal as opposed to disciplinary measures are a policy of despair On the other hand discipline is a prime educational force and in the case of the inevitable instability of unformed personalities is rightly enforced by measures which may in some cases include moderate physical punishment It is often forgotten by the extreme advocates of freedom in education that a child is not a little adult but a growing creature which needs guidance and restraint in the same fashion as any other organic creature The fruit tree which is allowed to grow without grafting and pruning will bear poor fruit if it bears any fruit Grafting followed by winter and summer pruning and root pruning are possibly painful processes The choice of situation and soil the application of manures must however be followed by such processes which may be regarded as the penology of the orchard If punishment discipline and restraint are kept within those limits of intentional betterment in the human orchard they seem to be not only justifiable but necessary J E G DE M

PENSIONS FOR TEACHERS —In most countries of Europe of the British Empire and of America it is recognized that most teachers are public or quasi public servants to whom the community are under an obligation which the payment of stipends does not wholly discharge it is also felt that teachers when advanced in age cannot well perform the difficult work of teaching the young and that they should not be required to keep on teaching after the age of 60 has been reached As the salaries paid to them seldom enable them to make full financial provision for their future and they are rarely possessed of inherited private means and as the work they do is not of a profit-making nature for their own benefit some public provision for their superannuation is made in many countries and it is now rather exceptional for such provision not to be made There are States in which teachers of State schools are considered to be part of the Civil Service in other countries such as Great Britain and the United States of America public teachers in schools or colleges are supposed to be private citizens or municipal officers rather than persons in the direct employ of the State in most countries a distinction in this matter is drawn between teachers of schools and teachers in universities and other differences of treatment are adopted in the case of Army schoolmasters schoolmasters

in the Navy, and in the Marines In France the retiring age is 55 in Canada 56 in Britain 60 in Germany 65 No general rule or formula of teachers pensions exists therefore, and the largest generalization that can be made is that pensions for teachers are either contributory or non contributory—either the teacher is required to make some annual payment to the Pension Fund during his years of service or he is not

The Contributory Basis. The most elaborate of pension systems on a contributory basis existed in Scotland between 1912 and 1919 when not only the teachers but the school boards made annual payments to a Pensions Fund the State being a third contributory and administering the system But in 1919 this system was abandoned in favour of one on the non contributory basis In the majority of contributory pension systems the teachers co operate with the State alone in this matter and in most systems of pensions for teachers, the world over the contributory basis exists In the United States of America fifteen out of twenty four State systems are contributory and out of sixty-four city and country systems over and above the State systems sixty one are contributory This was the case in Great Britain until the year 1919 and four German States had contributory systems prior to the Great War In France the salaries are taxed 5 per cent towards the cost of pensions in Canada a deduction of 2 per cent is made Even now in Great Britain contributions to some college school or university schemes of pension are made by the teachers under the Federated Universities scheme annual premiums paid by teachers to some insurance company of recognized standing are eked out by payments from university funds in order that retiring allowances may be provided and statutory contributions for pension purposes are made by teachers of poor law schools As there is no other country in which the provision of schools and other places of education is so diversely carried out as in England and Wales so there has been no country in which pensions for teachers have been provided in ways more various

The Non-Contributory Basis On the other hand there is no other country in which pensions for teachers are more liberally provided than in Great Britain now In Japan in most of the German States and in nine American systems the teachers are not required to make payments towards the cost of their pensions and in Europe elsewhere there has been some modification in the direction of a non contributory system since Matthew Arnold reported in 1887 that 'Everywhere in the countries which I have visited the teachers have retiring pensions to establish which there is a deduction made from their salary the countries which he referred to were Germany Switzerland and France But nowhere has provision been made which is superior to the system established for teachers in England and Wales by the School Teachers (Superannuation) Act 1918 and in Scotland by the Act of 1919 By these Acts a pension of as many eightieths of the average salary for the last few years teaching service as there have been years of service rendered up to a maximum of forty years can be obtained also a "lump sum or single payment, of as many thirtieths of that average as there have been years of service rendered up to a maximum of forty five years Thus a teacher paid £450 a year during the last few of forty years of service would retire at 60 years of age on a pension of £225 per annum from the State, and receive from the State also the sum of £600 without having made any contribution to the cost of this provision for his retirement Sums *pro rata* are payable to a teacher who retires disabled after not less than ten years of service, and in the case of the teacher's death while in service, a gratuity is payable to his estate This is the non-contributory system at the highest point reached anywhere hitherto

Pensions as Deferred Pay It is commonly said that every pension system is based on contributions, indirect if not also direct because a prospective pensioner works for less pay than he would accept if the pending pension were not within his expectations but that is probably an empty commonplace, or a truism not wholly true It can only be accurate where the pensioning authority is also the stipend-paying authority and if the principle of a non-contributory system be a pension proportionate to salary the pension increases in ratio as the salary does A more valid objection which applies to a pension system on any basis direct or contributory is that it ties a teacher to his service for at least a minimum period and therefore that local systems for one county or one city exclusively are particularly binding because they localize a teacher during most of his professional life But, after all, the condition precedent to a pension from public money is that public service shall have been rendered during a period reasonably long and as one clause in the Act of 1918 abrogated such few city or county systems of pensions for teachers as then existed in England service is changeable and interchangeable as between schools in any part of the country If it is not so rendered interchangeable as between Great Britain and Ireland, the reason is that the systems of educational administration existent in the three kingdoms are not the same The Irish pensions for teachers are very meagre

History of the Pension Movement in Great Britain. Teachers in the ancient endowed schools held a freehold position (just as the head masters of Scottish parochial schools did *aut vitam, aut culpam*) until the year 1868 From the time of Edward VI until then the master of an endowed school kept on in his post until some special provision was made for him but since 1869, schemes of administration for endowed secondary schools have included provision for pensions payable out of the endowed revenue With regard to public elementary schools in England and Wales, the Committee of Council on Education resolved in 1846 that a retiring pension not exceeding two-thirds of the salary should be payable to a school teacher incapacitated by age or infirmity in 1851 however this Minute of Council was reduced in its actual operation and in 1862 was abrogated altogether In 1875 it was to some extent revived for the benefit of those teachers to whom the promise had been made but the total sum available for these pensions was not to amount to more than £6 500 per year In 1893 that limit was raised to £10 580, and in 1896 the limitation of total amount was abandoned but still no pension of more than £30 a year was payable In 1898 an Act providing pensions on a contributory basis for teachers in Great Britain was passed but the payment by the State was limited to 10s per year of service, though in 1912 this subvention was increased to £1 per year of service and these provisions applied to elementary school teachers alone In 1918 the

system above referred to was adopted for all teachers in all schools aided with grant or inspected or otherwise recognized by the Board of Education, and thus a long process of enactment came to a satisfactory close Without some such system of pensions no State provision for education can be wholly efficient and no service of public schools is likely to be adequately filled or performed J H Y

PEOPLE'S COLLEGE, SHEFFIELD —(See ADULTS, EDUCATION OF)

PEOPLE'S HIGH SCHOOLS (FOLKEHOJSKOLER) —The earlier history of the People's High School will be found in the article on "Bishop Grundtvig in which the establishment of the first school of this kind at Rödding in N Slesvig is described Of this school Ludvig Schröder became the head two or three years before it had to move after the war of 1864, to Askov, a few miles farther north across the new frontier There he remained until his death in 1908 It was by his unwearying skill and business ability aided by a singularly able staff of helpers that the school step by step, was developed and widened into the leading school of the kind whether in Denmark or elsewhere It has thus become to a large extent a training-ground for the rest Schröder with his contemporaries Ernst Trier of Vallekilde and Dr Nörregaard of Testrup possessed academic training But equally important and indispensable was the contribution made by Kristen Kold (1816–1870) and others of the more earnest and thoughtful men from the elementary training colleges

Joakim Larsen the historian of the Danish elementary school says of Kold that "with regard to the instruction whether of adults or children he knew how to adapt Grundtvig's ideas to our actual conditions and especially our rural conditions Kold possessed no great store of learning but a rich experience of life keen psychological insight, an original way of looking at things and a rare power of fixing the attention Strange contradictions met in him—genius and a limited outlook a fine spiritual development and a commonplace exterior exaggerated self confidence and humble godliness Over all his other qualities towers his passion for passing on the torch of learning and wisdom and his unshaken trust in its power to ennoble the life of man Such are the agents that have built up these schools of liberal training suited to men and women from 17 or 18 years of age to 25 and upwards who can spare from the duties of life not more than three to five months at a time for higher education

Methods and Aims The schools have grown up amid difficulties but now number in Denmark about seventy nine of which more than half have cultural subjects only (history and literature) and the rest while mainly cultural have a technical annexe (agriculture or building construction) Some of these annexes have developed into independent schools of agriculture or horticulture so closely connected in sympathy with the others as to be united in one association Though the schools in Denmark are generally in private hands they receive from the State about £25 000 a year of which three fifths go in bursaries covering half the cost of studentship and two fifths are a contribution to the working expenses of the schools Board lodging and instruction in 1914 cost about £2 a month at an ordinary school (now £3) and about 25 per cent more at Askov and at the agricultural schools, but now nearly £5 The number of students in Denmark is over 8 000 every year

The use of books for the purpose of instruction is reduced to a minimum the chief dependence being on the lecture the "living word," with a song at the beginning and the close (Denmark is especially rich in historical songs) But two or three such lectures are often followed by a question hour to see if the points have been seized Special attention is given to gymnastics, both for men and women There is Government inspection but little Government control and no examinations Methods so novel are justified by their success (1) The schools have given a great impulse to co operative industry In the last thirty five years there have sprung up 1 100 co operative dairies besides many co operative bacon factories and egg export associations in all of which old high school students take a leading place (2) Wherever there is a strong high school there also is to be found a free kirk where the people choose their own pastor without becoming dissenters and with the free kirk is found the free school not imposing in its exterior but by its bright and genial methods and by its closer connection with the home exercising a healthy influence on the ordinary school (3) In the last nineteen years 30 per cent of the members of the two Houses of Parliament have been chosen from old high school pupils including two prime ministers

There are corresponding schools in Norway Sweden and Finland three among Danish emigrants in the United States and Fircroft at Bournville near Birmingham owes much to Danish influences J S T

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PEOPLE'S PALACE AND EAST LONDON COLLEGE, THE —Sir Walter Besant's novel *All Sorts and Conditions of Men* 1882 put forward an imaginary picture of a palace of delight satisfying the great need of East London for healthy recreation and social advance Public feeling was roused and a subscription opened With the help of moneys left in 1840 by J B Beaumont and numerous donations a scheme was begun and the People's Palace was founded in 1887 Queen's Hall was opened by Queen Victoria in 1887 as a concert hall and formed part of the scheme Evening classes were begun and workshops laboratories a gymnasium, refreshment and recreation rooms were opened in temporary buildings During the first year 5 000 students were enrolled Membership in the institute with free admission to all meetings except classes and the swimming bath was offered to both sexes between the ages of 16 and 25 a junior section quickly followed for those between 13 and 16 The Palace provides concerts, dances exhibitions socials billiard and reading rooms, a library and clubrooms

The educational side of the scheme was known separately as the East London Technical College

It increased in numbers and influence under the care of the Drapers Company whose generous donations freed the Palace from any financial responsibility for education and became recognized as a school of the University of London and was called East London College

East London College, with the People s Palace occupies an extensive site in the Mile End Road a short distance from the London Hospital Medical College in conjunction with which it prepares students for the medical degrees of the University of London and for those of the Conjoint Board Students of both sexes are admitted to all courses of the College if over 16 and sufficiently educated The council of the College opened a hostel for women students in 1918 at Snaresbrook Ten entrance scholarships and four exhibitions are awarded annually by the Drapers Company and numerous prizes and awards are made Courses are offered in the faculties of arts science engineering aeronautical engineering and medicine Facilities exist for post graduate and research work in the evening evening courses are held in Honours French and Honours mathematics and students can be prepared for the M A examination in English French modern history and mathematics

The tuition fee for a session at the College is 15 guineas

PERCEPTION — Implies knowledge of the world of material things in which we live With this world we make acquaintance through the sensations we receive from it This is so much a matter of everyday experience that it is only when we begin to examine its nature and to inquire into its method that we find questions raised that are not easily answered and on the answers to which depend the fundamental principles of instruction

Into the ultimate questions of the nature of the mind that knows and of the matter that is known and of the relations between them we need not enter Ours is the simpler task of inquiring how on the assumption that both mind and matter are in some sense real the one gains knowledge of the other

The first crude solution offered by the unreflective consciousness would probably be that the mind is a kind of mirror which reflects copies of things Over that we need not linger Science by reducing all impressions on the organs of sense to forms of vibration cuts away the ground on which the proposed explanation must be based and makes further criticism superfluous More examination is needed of the theory so long expounded by the majority of psychologists that the primary constituents of consciousness are independently existing sensations which gradually become associated in repeated experience so that when the same group has occurred together a number of times we regard it as representative of an external object

The essence of this doctrine is that knowledge of the external world is passively received by a mind devoid of initiative, and consequently formed wholly by its environment and that its worth depends on number and variety of experiences Hence comes the doctrine that it is good to form the habit of comprehensive observation, superficial though it must be, and the corollary that increase of knowledge beyond the sphere of personal observation should be on the same lines of accumulating as great a store as possible of facts

A whole theory of pedagogy is, therefore, involved in this doctrine of perception and if this latter be true every incompatible method of instruction must be not only ineffective but disastrous, as opposed to the way in which mind really works

The doctrine is, however, demonstrably false It takes the ultimate results of analysis as original elements of consciousness There are no such things in the world of reality as sensations existing by themselves and then combining in various ways Little study of the way in which we actually attain a piece of knowledge is needed to show us that we do not first grasp each individual element and then combine them into a whole but that we first vaguely apprehend the whole and then proceed by analytic study to make that apprehension distinct in its elements All advance of knowledge, as we know it in adult life is towards greater definiteness Examination of the early life of children shows that the beginnings of knowledge are on the same lines as its later advances The earliest acquaintance of the babe with the world of things is not in the form of a number of isolated and distinct sensations which he has to build up into as true a representation of the world as possible On the contrary all is both vague and confused The sensations of one sense are not distinguished from those of another nor the child s body from surrounding objects Indeed to him there are as yet no objects Those he has to find

Now in the first place be it noted that this finding means selection of those parts of the whole mass which have most attraction for him At first, the directive force is instinct but soon the influence of discriminative intelligence is seen in more or less definite choice between the promptings of several instincts And choice implies at once a learning from the past and a looking forward to the future Moreover such selection is not an isolated event it is part of a continuous activity prompted by instinct and increasingly guided by intelligence The objects perceived are then perceived not simply as of such and such a kind but in such and such relative positions with regard to each other Further perception is essentially the expectation that if certain acts are done certain results will follow For we never have concurrently all the sensations which an object can give us and, as knowledge becomes more precise less and less is needed to present the whole to the mind (*e g* the scent of an unseen flower may set us searching for it)

Implications of the Theory When the implications of all this are examined even the most elementary perception is seen to be a complete piece of life in which are implicit many forms of mental activity which in analysis can be distinguished from it They are implicit in that they are not attended to but they are present because without them the act of perception could not take place Retention of the past is necessary for recognition but in mere recognition there is no call for explicit memory Recognition as this or that kind of thing further involves conception, for, without the assimilation of likes into a class, no such recognition is possible But in perception such relations are not explicitly thought And so on

The theory of instruction implied by this analysis is evidently opposed to that already noted Knowledge is no longer something to be acquired and stored it is a developing mode of life Knowledge

of things is gained in practical dealing with them in ways determined by felt purposes Increased knowledge implies greater insight into such relations as those of similarity dissimilarity, space time, and causation To these abstract aspects of perceived things attention should be directed at need To suppose perception conception and reasoning to be distinct successive stages of development is to misapprehend entirely the process by which man learns to know J WELTON

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PEROTTI, NICCOLO (1430–1480) —A distinguished Venetian scholar who belonged to a poor family, and in his early years taught Latin for a livelihood His learning secured him the favour of the Popes and in 1458 he became apostolic secretary and archbishop of Manfredonia He had been made Poet Laureate by the Emperor Frederick III in 1452 and admitted to the Imperial Council In 1499 he published his *Cornucopiæ* a commentary on the Latin works of Martial and he also translated several Greek works into Latin and wrote poems in Italian

PERSIA, THE EDUCATIONAL SYSTEM OF — For practical purposes the history of Persian education may be divided into two parts (1) from the earliest times to the Mohammedan conquest in the seventh century after Christ (2) from the Mohammedan conquest to the present day As regards the former period our information is extremely defective Although the Persians have always attached great importance to education we find only a few scattered references to this subject in the *Avesta* and the later Pahlavi literature while the Mohammedan chroniclers who treat of ancient Persian history are mainly concerned with the doings of kings and princes Greek writers are not so reticent but it must be pointed out that some of them put forward their own theories in the guise of facts and deserve less credit in proportion as they give more details For example the system of education which Xenophon (*Cyropaedia* I ii 2 foll) ascribes to the Persians has a distinctly Utopian character The *Avesta* originally contained passages which are now lost on the teaching of children by their fathers or guardians and on the subjects and methods of the education given by the Zoroastrian priests to their disciples The purpose of this teaching was in the first place "to make the child a capable and useful member of the community and to implant in him those virtues by which the old Iranian race is distinguished and which the *Avesta* sums up as good thoughts good words and good deeds At the same time boys received a special training with a view to their future calling its nature was determined as a rule by the class to which the father belonged The warrior would instruct his son above all in the handling of arms in the use of bow lance and sword The farmer would take his son to the field and show him how to guide the plough sow the seed etc The priest would teach his children the sacred books and foster in them a sense of the holiness and dignity of the priesthood" (Geiger *Ostiranische Kultur im Altertum* p 237) Although in the ancient Persian empire physical training together with moral and religious lessons formed the staple of education this does not justify the statement of Herodotus that Persian boys were taught only three things to ride to shoot and to speak the truth Probably the education of children of noble family always included a certain amount of literary culture Writing (*dapīrih*) is mentioned among the accomplishments of the princes of the Sāsānian dynasty (founded in the third century of the Christian Era) one of them Bahrām Gūr, who was educated at an Arabian Court is said to have studied Arabic and Greek as well as Persian and three tutors were appointed to instruct him in literature falconry hunting polo archery swordsmanship riding administration and the duties of a king Such tutors were commonly drawn from the priestly class which also provided suitable instruction for those who would now be described as candidates for holy orders The influence of the Zoroastrian Church was unfavourable to secular learning but towards the end of the Sasānian period Chosroes I (Anūsharwān) who reigned from A D 531 to 579 founded at Jundēshāpūr, near Susa a medical and philosophical school which was still flourishing in the days of the Abbasid Caliphs

Mohammedan Influence When the faith of Zoroaster was superseded in Persia by that of Mohammed an educational revolution necessarily ensued Henceforward Persian education cannot be separated from the general theory and practice of the Mohammedan system as a whole Its main features are admirably depicted in a sketch written fifty years ago by Dr Polak, Court physician to the Shah Nāsiruddin (*Persien das Land und seine Bewohner* vol i p 269 foll) In their sixth year boys are placed under the charge of a *lālā* (pedagogue) at home or are sent to an *ākhun* (schoolmaster) and nowadays the custom of letting girls share in the instruction given to the boys is spreading more and more There is no compulsion to attend school, nor does the Government do anything to promote elementary education this matter is left entirely to the parents Anyone who can write is at liberty to hire a shop in the bazaar for the purpose of teaching the children entrusted to him They begin with the alphabet then they are taught to read the Koran which is recited by the teacher and committed to memory by his pupils but as it is not translated to them its meaning is not comprehended at all Instruction in writing begins at the same time When the Koran has been read through once or twice Sa di s *Galistān* is put into the children s hands The wise and witty sayings in which it abounds are learned by heart and form the chief basis of education At this stage too the children are taught the rules of deportment —how to sit dress receive guests and hide every feeling of admiration astonishment anger joy etc On reaching their tenth year some enter their father s business or seek service as pages while the well-to do are handed over to a *mulla* who instructs them in Arabic grammar and composition explains the difficulties of the Apostolic Traditions and reads with them the *Masnavi* of Jalāluddin Rūmi, the *Shāhnāma* of Firdausi and the odes of Hafiz Education is usually finished at the age of 15 or 16

Judged by Western standards this programme is one sided and superficial enough The absence of arithmetic not to speak of science and mathematics is typically Moslem On the other hand the native

spirit of Persia asserts itself in the honour paid to poetry and *belles lettres* and particularly in the unique position assigned to the *Gulistān* with its ripe worldly wisdom and very catholic morality

Modern Primary Education Since the proclamation of the Constitution in 1906 important reforms have been introduced The directors of all schools and colleges are now responsible to the Ministry of Public Instruction which exercises a general supervision over details of management and organization Amongst the duties of the director (*mudīr*) the following points are specially enumerated to be in attendance during school hours, or in case of absence to appoint one of the teachers as his substitute to make himself fully acquainted with the work done by each member of the staff and furnish the Ministry with a written programme including time tables at the end of the year to supply a list of the pupils who have obtained the highest marks for conduct and learning in order that prizes may be awarded to them to nominate a prefect for every classroom to prohibit political debates and reading of newspapers in school to see that no person except Government inspectors, shall enter the school without his permission to report any defects such as wear and tear of furniture etc to provide for the proper lighting and ventilation of the classrooms and to see that the pupils keep themselves clean to expel any pupil who has committed an offence and is declared by his teachers to be incorrigible but only after having communicated the circumstances to the Ministry of Public Instruction

Elementary and secondary schools receive no financial support from the Government The fees are collected by the director who is obliged to send to the Education Department monthly accounts of income and expenditure It may be added that the official regulations lay great stress on moral training and the importance of character The teachers are particularly urged to inculcate patriotism by all means in their power

Modern Higher Education Until recently, higher education was organized on a theological basis Those who wish to become *'ulamā* (theologians and lawyers) enter a *madrasa* where they obtain board and lodging books and a small pension or bursary from the trust fund of the college The course for the doctorate in divinity comprises Arabic grammar and syntax rhetoric prosody logic the principles of theology Koranic exegesis the Traditions of the Prophet jurisprudence arithmetic and algebra (Polak *op cit* vol i p 289 fol) Learned institutions of a secular kind are almost unknown Teheran however, has a university (*dār al funūn*) "Here English, French Russian Medicine (both ancient and modern) Mathematics and other useful accomplishments are taught on European methods The students vary in age from mere boys to youths of eighteen or nineteen and are distinguished by a military-looking uniform They not only receive their education free but are allowed one meal a day and two suits of clothes a year at the public expense" (E G Browne, *A Year Amongst the Persians* p 94 fol) Within the last decade a comprehensive scheme of education has been established by the Persian Government in all secondary schools The six years course includes Arabic, Persian English, French, German, and Russian, history and geography logic, philosophy and jurisprudence arithmetic, mathematics, natural history physics and chemistry R A N

PERSIAN, THE TEACHING OF.—(See ORIENTAL EDUCATION IN GREAT BRITAIN)

PERSPECTIVE, THE TEACHING OF —The term "Perspective for the teacher has a double content It may refer to the general laws of appearance to which all pictorial representative drawing conforms or to their diagrammatic and constructional setting out in accordance with prescribed rules The first has its place even in the object drawing of the elementary classes the second (linear perspective) is an application of projectional geometry and follows one course of geometrical drawing (Aerial perspective refers to alterations of colour and definition due to distance) Apart from the first the second is somewhat empiric while unrelated to the second the first often wants ground of assurance It will be seen then that the first, which may be thought of as the *Art* and the second which is the *Science* of perspective are most helpfully taught together and that as far as possible practical experiment and observation should accompany mechanical representation

Perhaps the greatest difficulty met with by young students in the pictorial representation of objects is rendering of perspective The necessity then arises for the use of familiar illustrations in which it can be quickly grasped such as the vanishing of railway lines diminution in size of telegraph poles small size of a figure at a distance and also by examination of photographs and pictures Tracing paper should be laid on these the vanishing of parallel lines carried out the centre of vision and the eye line found In the classroom a very convincing demonstration of angular perspective may be obtained by the use of two slips of cardboard as in Fig 1 These may be conveniently cut from a post card and held between the eye and the object and any apparent angle set down and measured

In order to facilitate perspective representation in outdoor sketching—particularly of a military character—use is made of what is called a retractor —a picture plane in actual fact—on which a diagram of lines is drawn (*see* Fig 2) The same diagram to a larger scale is drawn in faint lines on the paper on which the drawing is to be made The instrument is then held up in front of the eye at the end of a string or cord a button at the other end being held in the mouth to keep the distance from the eye constant The positions of objects and features in the landscape are noted by their apparent intersection with the lines on the retractor, and thus can be transferred correctly as regards size position, and inclination to the diagram on the drawing

Formal Perspective In the teaching of formal, or linear perspective the fundamental laws should be established at the outset (1) Straight lines at right angles to the picture plane vanish in the centre of vision (2) straight lines parallel to the picture plane are so drawn and if horizontal are parallel to the eye-line, (3) horizontal parallel lines not parallel to the picture plane vanish at some point on the eye line (4) parallel straight lines other than horizontal and inclined to the picture plane vanish at some point not in the eye-line

These rules should be convincingly demonstrated by means of cardboard models and diagrams (as in Figs 3 and 4) Fig 4A in addition to the two primary planes—picture plane (P P) and ground plane (G P)—shows four varieties of vertical

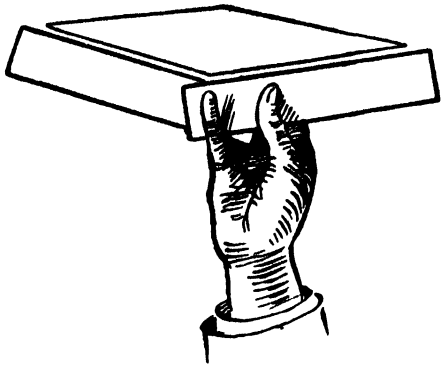

FIG 1

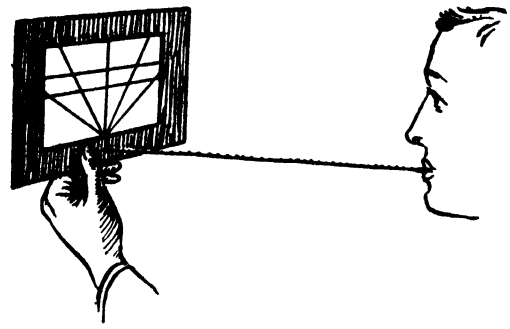

FIG 2

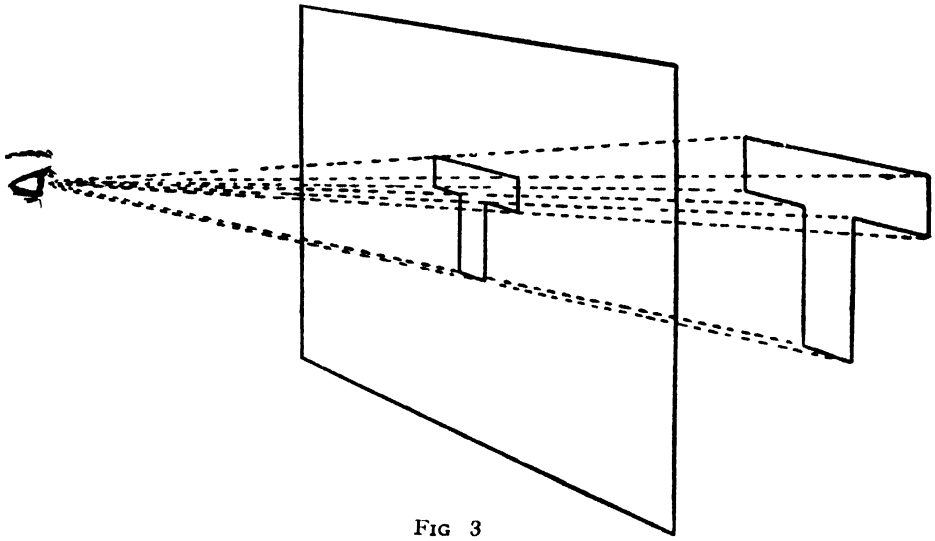

FIG 3

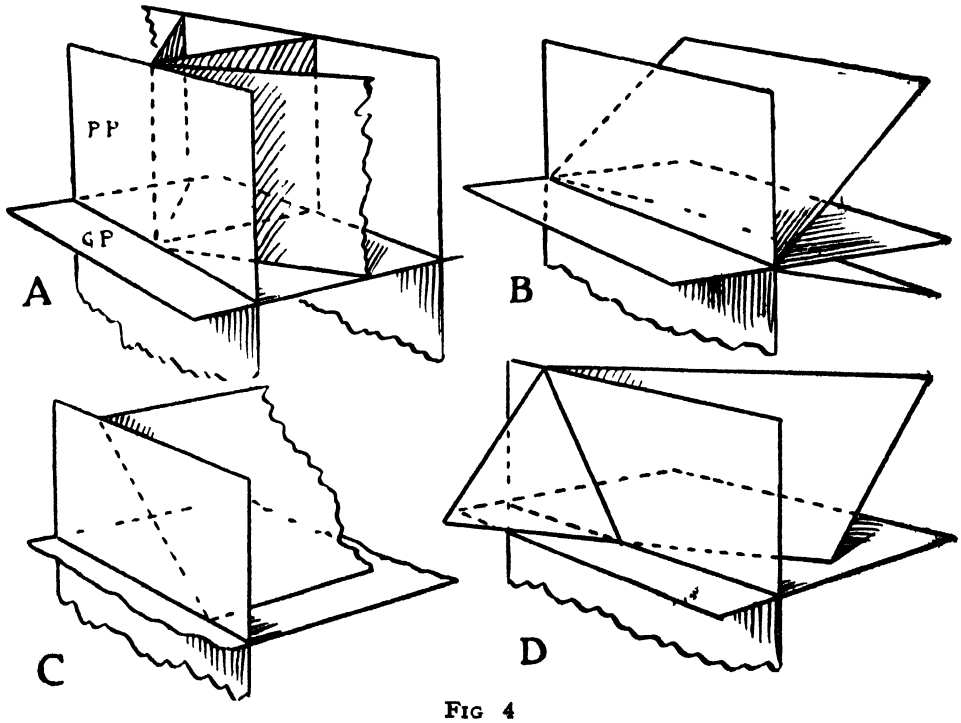

FIG 4

planes Fig 4B illustrates directly ascending and descending planes Fig 4C shows an inclined plane, and Fig 4D an oblique plane A sheet of glass will also be of considerable help in appre ciating the principle of the picture plane, especially if the student be encouraged to trace upon it in chalk or pigment the outline of objects placed beyond At an early stage, simple exercises including shadows and reflections, may be introduced

With regard to the former, the two distinctions should be made clear viz shadows from an artificial light *radiate* from the seat of light, those cast by the sun are considered to be parallel to one another and so vanish to vanishing points Demonstration with a lamp or candle and with objects in the sun s rays will be helpful A mirror also when dealing with reflections, will convincingly illustrate the law that the angle of incidence is equal to the angle of reflection

Fig 5 suggests suitable subjects for working by freehand methods S C

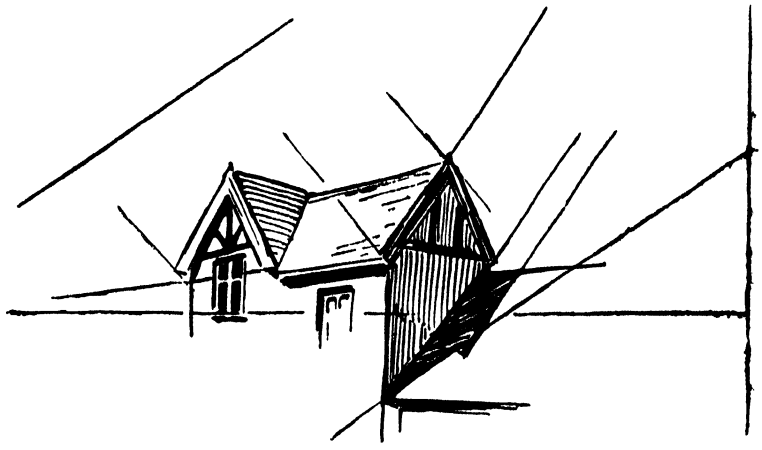

FIG 5

PERSPECTIVES, APPRECIATIONS, AND ATTITUDES —The educational purpose has been described as the purveying of " knowledge ideals habits methods of work perspectives appreciations and attitudes ' The present article deals with those subtle and ambitious forms of the teacher s work intended by the last three of these terms That each of the seven is exclusive of the others is not of course implied

Doubts exist as to whether the average teacher should attempt such tasks at all Religionists for example protest that the ' religious attitude " in the child cannot be called forth by a teacher who is without religious convictions The protest pos sibly sectarian and selfish in origin and open to an obvious *tu quoque* (for the docile denominational teacher is not more conspicuously successful in teaching religion than his undenominational col league), has at least the merit of raising in a definite form the question whether subjects which depend much for their successful teaching upon the sense of an inward " call " can be taught by teachers who are appointed independently of any such call The same question arises in connection with the teaching of appreciation generally for a teacher's insensibility towards music or art can easily be passed on to the pupil with the addition of a positive dislike Modern " paganism has actually been attributed to religious education that modern " philistinism " has its origin in our attempts to teach beauty is arguable though improbable

It will be assumed that one solution of the difficulty namely reform in the administration of education and particularly in the assessment of teachers, is in operation, and that some teachers at least, feel it " worth while " to grapple with the problem of " perspectives, appreciations, and attitudes "

Perspectives. The teaching of *space* and *time perspective* should not be very difficult, though it is so rarely attempted that most children have no idea of the relative sizes of countries, and most adults no idea whether the coal measures preceded the chalk David, Alexander, Isaiah, Jeremiah, or Dante, Milton Indeed, the continued neglect of time charts constitutes a small though genuine educational scandal, though a more serious scandal, everywhere winked at, is the purveying of untruthful ideas with regard to the history of the world Every scientist is aware that man has been on the earth for hundreds of thousands of years and that his ancestors are to be sought among the lemuroid animals of the Tertiary Period So long as facts like these are concealed religious education remains guilty of disingenuousness and our unprotesting educationists from the highest to the lowest, stand confessed as ignorant or pusillanimous In short, the teaching of space and time perspective is the teaching of plain truth about the universe and with a little effort and apparatus the thing could be done A few hints must here suffice

SPACE PERSPECTIVE Geographical and astronomical charts and models (Western Galleries South Kensington Museum) Sun and inferior planets (models to exact scale) Books like *Man s Place in the Universe* (Wallace) Romances of Verne and Wells

TIME PERSPECTIVE Its chief vehicles are *symbols, panoramas* and *relics* Space for-Time Principle (Hutchison) Line of time (Withers, Keatinge) Geological, primitive, and historical times Parallel lines of time Lists printed or learned by heart the Caesars the American Presidents The busts of the Caesars (British Museum) Other chronological collections Historical frescoes Pageants of history Panoramic books like Gibbon (copiously illustrated, if possible) Panoramic passages Chap XIX of G A Smith's *Historical Geography of the Holy Land* (Battles in the Plain of Esdraelon, etc), Hugh Miller's " Mosaic Vision of Creation " in *The Testimony of the Rocks* Kappa's *Let Youth But Know* (' Out of the depths ") The two-thousand-year-old tree (South Kensington)

The main pedagogical question is whether the above apparatus should be used as apperceiving or as apperceived material Now the visitor who, wholly unequipped with interpretative ideas, pays a visit to a museum, will acquire, no doubt, a basis for future study—apperceiving material for future acts of apperception—but his visit will otherwise be relatively uneconomical of time and effort.

As a rule, therefore some schematic or symbolic knowledge is a prerequisite for the apperception of panoramas and relics But if time and facilities are copious, the schematic knowledge can itself be built up from panoramas and to some extent from relics The mental process with most people is a rhythm in which the schematic and the illustrative both play their parts

Time perspective as some of the above examples indicate, passes into the more complex HISTORICAL PERSPECTIVE There is, in fact (1) mathematical time, calculable in hours and centuries (all equal), and (2) psychological or historical time, which is complicated by the varying speed at which human development takes place

> " Better fifty years of Europe than a cycle of Cathay "
>
> " One crowded hour of glorious life Is worth an age without a name "

Wide knowledge and the possession of schematic or time perspective are the parents of historical perspective Every geologist is convinced that no mammalian fossil will ever be discovered in Silurian rocks his conviction springs from his knowledge of geology and his possession of a time scheme

The intense interest of tracing the history of arts and ideas need not be pointed out here Artistic invention in the fourteenth and fifteenth centuries proceeded at a breathless rate Giotto learned how to paint with dramatic force, Paolo Uccello s place in art is indicated by his famous exclamation " What a beautiful thing is this perspective ! " Pollaiuolo resorted to anatomy, Leonardo da Vinci invented chiaroscuro

In the moral realm too, ideas are born grow and die The idea of witchcraft has almost died the idea of eugenics is in its vigorous youth Certain events could not have happened earlier than— ?

Whoever can date things for himself has a sense of historical perspective, and unquestionably such dating ought to be a recognized educational exercise, in higher if not lower schools But spiciness is added to the problem by the existence of historical rediscoveries anticipations parallelisms and coincidences Some men are born before their time, conversely, there are incredible lapses into barbarism Though the unexpected always happens, yet history repeats itself

VALUATIONAL PERSPECTIVE is a matter of ethics Some things are trivial others are important and it should be the task of moral instruction to redress the unreliability of most men s judgments of value

Appreciations. Only during the last few years has the necessity become obvious to distinguish between the appreciation and the learning or technical execution of poetry music painting applied art, etc The assumption has always been that music meant singing or playing, that art meant drawing or painting the teacher s task has in fact been regarded as that of producing amateur musicians and artists This view has been infinitely mischievous and has been perhaps one cause of British " philistinism ' Plainly, most people cannot by the nature of their occupations become musicians or artists though nearly all can be led to appreciate music and art Teachers—or rather their advisers—by concentrating attention on the first, have destroyed the chance of achieving the second purpose

Aesthetic appreciation is largely incompatible with the simultaneous solving of intellectual problems and the performance of technical operations In spite of this, we have " taught poetry " by presenting and explaining difficult words, and have " taught music " by means of a wrestle with printed signs , and although the first impression " is all-important in matters of taste, we have prevented any impression whatever from reaching the aesthetic sense of the child

The solution in the case of the teaching of poetry apparently lies in (1) *negative preparation* (removing intellectual difficulties days or weeks in advance) (2) *positive preparation* (supplying the materials on which metaphors etc are based) (3) vigorous, undisturbed *presentation* on the principle of " ear before eye ' In the case of music, a similar though perhaps less elaborate policy is called for, and sundry adaptations of method to subject-matter will be found necessary in the treatment of painting and the other arts

Not only the aesthetic but also the religious problem might be largely solved by means of a *school liturgy* or scheme of celebrations in which music poetry and passages from Biblical and other literature took the place of " lessons

Attitudes. Professionally yet not without sincerity and some educational justification the clergy insist that the school should create " attitudes ' as well as confer knowledge and skill In particular, they champion what they call reverence '

The psychology of attitudes has yet to be written but unquestionably, the attitudes of the " puritan " the " jingo, ' the advocate of " non resistance the ' art for art s sake advocate and the like may be the results of ideals consciously adopted as a result of suggestion or conviction and subsequently transformed more or less into habits Certain other attitudes may have other origins one at least has been suggested under " Appreciations

With regard to ' reverence, ' it is fairly clear that no reverence can be generated amid the slovenliness of the ordinary school lesson on religion, that " first impressions " will have to be exploited more fully in the future and that movements and ceremonials full of stateliness and symbolism will have to be invented or adapted The one reverence of the cleric and the three reverences of Goethe will have to ramify into thirty or more

In this sense the school will have to " teach religion ' and teach plenty of it But it will be a religion that tells no lies imposes no test or strain disgusts no child with the Bible and creates none of the dividing prejudices which, at present, some forms of religion deliberately set themselves to create F H H

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PESTALOZZI, JOHN HENRY (1746–1827) — Was born in Zurich, and spent practically all his life in Switzerland His work as an educational pioneer is the more valuable from the fact that it arose out of his direct experiences

His interest in education sprang from his love for humanity, he was a patriot, but in the widest sense

He was deeply moved by the wretched state to which the peasantry of Switzerland had sunk, and direct contact with them convinced him that education alone could raise them to responsible self-respecting beings His own childish experience of middle-class poverty proved that ignorance and not poverty degrade man.

Throughout his life two characteristics were continually at war with each other These were, on the one hand, his enthusiasm, stirred almost by divine insight and lofty ideals and on the other his lack of power to carry out a practical scheme so that it could be adapted to financial circumstances He could not have done his work if he had not been imbued with a deep trust in humanity even though, through it, his work came to apparent failure in the end But it was failure of the noblest kind, which left a rich bequest to posterity

The Swiss schools of his time for the children of the poor were schools in name only, frequently they were held in the one room of the schoolmaster who had to combine another industry such as cobbling, with his badly-paid profession The curriculum was supposed to cover the elements of reading writing and counting, with a verbal knowledge of the Heidelberg Catechism The schools of England and Wales were hardly better those of Scotland had already been influenced by Knox The people of Switzerland were trying to free themselves from the almost feudal supremacy of the better classes and the members of the socialistic circle to which Pestalozzi belonged were ardent supporters of the political and educational ideas of Rousseau

His Life Work His life was a curious medley of failure and success For a short account it is convenient to divide it into periods with each of which Pestalozzi seems to travel further towards his goal

The Preparation Period consists of his home experiences of poverty and family life his education at the schools and University of Zurich and the influence on his developing mind of students, teachers, and professors, no less than of the prevailing political opinions of the time when Switzerland was working up to freedom The visits he paid to his grandfather, the pastor of Höngg, helped him to realize peasant life more deeply At this time he had not chosen a profession

The Second Period covers about thirty years of life at his farm of Neuhof near Zurich (1769–1798) Here he settled on his marriage intending to become a farmer and "return to Nature" The first direct contact with the problems of education was forced upon him by the birth of his son and as an outcome of this we have a fragmentary but valuable contribution to educational literature in the father s *Diary* As a farmer he was a financial failure, and when poverty stared him in the face, in 1774 he took in twenty of the poorest children to try the experiment of educating them to be self-respecting, independent beings, through industrial training They worked in the fields, learnt to sew, weave spin and garden, in the intervals as well as during work, they were taught the elements of education The scheme left Pestalozzi rich in ideas, and though in 1780 he had to let the children go, he embodied his experiences in the *Evening Hour of a Hermit* and *Leonard and Gertrude*, through the latter book his ideas reached many corners of Europe

The Third Period covered the Stanz experiment In 1798 (at 50) he was asked by the Government to take charge of about eighty beggar children' whose parents were the victims of a civil outbreak at Stanz in the Unterwalden Canton For nine months he lived among them and, almost single-handed tried to civilize them, less by teaching than by training, for their degradation was great The Government brought the experiment to a sudden end, but again Pestalozzi was left with fresh experiences, which he embodied in a letter to his friend Gesner From this he gained clearer ideas as to moral training and discipline, and the place of handwork in education

The Burgdorf Period lasted from 1799 to 1805 Again the Government appointed him to establish an institute in the military castle of that town and here flocked to his side young men attracted by his pioneer work both in writing and in practice —notably Krusi Schmidt and Niederer During this period he wrote three books *How Gertrude Teaches Her Children* a kind of commentary on *Leonard and Gertrude* the *Mother's Book*, which at the time was greatly misunderstood, and *An A B C of Sense Perception* Visitors and students flocked to the institute notably among educationists Herbart and Froebel

The Yverdon Period followed, a new Government imagined it needed the Castle of Burgdorf, and in 1805 Pestalozzi set up a school at Yverdon on the Lake of Geneva in the Castle of that town A period of prosperity followed pupils and visitors came in great numbers and Pestalozzi was able to carry out more fully many of his ideas, especially that of regarding the school as a large family, from the standpoint of discipline It came to an end, however, in 1825, through discord on the staff, in whose hands Pestalozzi had placed himself too absolutely He returned to Neuhof where he wrote and published his Swan Song and in 1827 he died at Brugg The inscription on his tombstone reveals him best *Alles für andere für sich nichts*

Contribution to Education. He gave his best to the world, though, in the first instance, to his own country He described prevailing conditions thus "The public common school-coach throughout Europe must not simply be better horsed, but still more it must be turned round and brought on to an entirely new road" The "turning-round" of Pestalozzi was his substitution of a science of education based on the human being, for an education based on the scanty elements of commercialism —the three R's Out of his observations of children grew his psychology, and though in some directions we have gone far on the road since then he laid many of the most lasting foundations To him we owe one of the most fundamental and revolutionary of maxims for the teacher "It is life that educates"

To Pestalozzi we owe the care given to the development of the senses by means of direct contact with surroundings To this he joined language training The much abused object lesson is a descendant, and books of such lessons were planned and published by Dr and Miss Mayo, his most prominent English disciples, in the early part of the nineteenth century

Education by means of sense activity has led to fundamental reforms in arithmetic and geography teaching, modern direct methods in both subjects owe their beginnings to Pestalozzi His school was the first where handwork was introduced as part of the school curriculum He discovered at Stanz that the children could not learn other things while doing manual work, unless the latter was already

stereotyped, by this discovery he laid the foundation of what we know of the educational value of handwork and its relation to thought

Perhaps his greatest contribution to education was the spirit of humanity he brought into the schools He regarded himself as the father of his children and they recognized the relationship very easily He discovered at Stanz that moral training comes only by using the daily events of life as opportunities for moral experiences but always in an atmosphere of faith and love He believed the family life to be the basis of religion

A few Pestalozzian schools were established in England chiefly through the agency of the Mayos but they did not long exist as such He was too good an educationist to have a system instead his influence permeated education He gave it a new foundation a new aim a new spirit and he breathed into its dry bones the breath of life H B S

PETERBOROUGH TRAINING COLLEGE —This College owes its foundation to the work of the Northamptonshire Education Society which in 1812, opened a central school at Northampton as a model to be imitated throughout the country After the establishment of the pupil teacher system, the Society made an effort to establish a training college for masters to promote education on the principles of the Established Church With the assistance of Dr Davys (Bishop of Peterborough) a site was secured under the shadow of the cathedral and a practising school was erected In 1859, fifteen students were admitted under the Rev C Daymond as Principal and lodged in Swanspool House The duties of the Principal included the organization of the Practising School which accommodated 200 boys A permanent college was opened in May 1864 and managed by a committee apart from the county society Accommodation was provided for fifty students—twenty five in each year of residence The Rev C Daymond was succeeded in 1892 by the Rev T Ward In 1895 large additions were made to the buildings including a library a recreation room a lecture room and a science laboratory The old practising school is utilized as a chapel and music and art rooms and under the Education Act of 1902 the school itself has become an unprovided school The curriculum of the College provides training for the Board of Education certificate for schoolmasters and the old students include many who have become clergymen inspectors education secretaries and tutors at training colleges

PETRARCH (PETRARCA), FRANCESCO (1304–1374) —He was one of the earliest and most famous modern lyric poets, the earliest of the great humanists of the Renaissance, and the founder of modern classic culture He was born at Arezzo educated at various places including Bologna and studied classics his favourite authors being Cicero and Virgil From 1326 he was attached to the Papal Court at Avignon and secured noble patronage especially that of Jacopo Colonna, Bishop of Lompez He became famous for his learning and his genius as a poet, and for many years honours were showered on him by kings princes and senates of cities He travelled widely and collected many valuable manuscripts In 1353 he left the Court and retired to a quiet country house near Florence, where he spent his remaining years His Latin works were the result of a passionate admiration for antiquity and years of patient effort to imitate the thought and expression of the great Latin writers His purity of style in these works called forth the unbounded admiration of contemporary scholars The most famous are *Africa* an epic on Scipio Africanus, and *De Viris Illustribus* a series of biographies His Italian works include songs sonnets and madrigals almost all inspired by his unrequited love for "Laura" whose identity has never been completely established (See also CLASSICAL LEARNING AND CRITICISM, RENAISSANCE THE)

PETROLOGY —(See GEOLOGY)

PETROGRAD, THE UNIVERSITY OF —(See RUSSIAN UNIVERSITIES)

PETTY, SIR WILLIAM (1623–1687) —A publicist and educationist born at Romsey in Hampshire the son of a clothier As a boy his greatest delight was to look on at the artificers (*e g* smiths watchmakers carpenters joiners), and at "12 years old he could have worked any of those trades' At school he acquired a fair knowledge of Latin and began Greek but at 12 years he was bound apprentice to a sea captain and at 15 years he started as a merchant He then entered the Navy On the outbreak of the Civil War in 1643 he pursued his studies especially medicine, at Utrecht Leyden Amsterdam and Paris and managed at the same time to 'bind up his brother Antony He is said to 'have maintained himself by traffic whilst studying abroad and even to have brought money home In 1647 he was granted a patent by the Long Parliament for his art of double writing by an instrument by which "with an hour s practice you may write two copies of the same thing at once' In 1649 he became a doctor of physic and Fellow of Brasenose College Oxford The new Society of Oxford philosophers often met at his lodgings In January 1650–1, he was made Professor of Anatomy at Oxford and in the next month he was appointed to the Professorship of Music in Gresham College London and held the two posts concurrently In 1652 he was physician to the Army in Ireland There he carried out the organized "Down Survey" the first scientific survey in Ireland He was an original member of the Royal Society in 1662 As an economist he attacked the mercantile system in its supposition that the abundance of the precious metals was the standard of prosperity and pointed out that wealth was derived from labour and land From his wide outlook and skilled interests his views on education have special value They are contained in his Advice to Mr Samuel Hartlib on the *Advancement of some Particular Parts of Learning* He is a convinced Baconian, and endeavours to apply Bacon s realism to school conditions He deliberately excluded the classics and even Latin grammar from the curriculum of the ordinary child All children from the highest to the lowest classes, should be taught some "genteel manufacture' in trade or technical schools, *ergastula literaria* (*i e* a literary house of work), where children should be taught to do something for their living as well as learn to read and write and the elements of arithmetic geometry, and useful arts He proposes that the old hospitals (see HOSPITAL SCHOOLS) should be converted into a *Nosocomium Academicum* with house garden library chemical laboratory, anatomical theatre *apotheca*, and all necessary apparatus

Teaching was to be realistic (including observation experiment, and demonstration) One great textbook the *Vellus aureum*, was to suffice after the manner of Campanella (*q v*) in his *City of the Sun*

F W

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PHARMACEUTICAL PREPARATION AND PROSPECTS —The regulation of pharmaceutical practice in Great Britain is effected by the Pharmacy Acts of 1852 to 1908 and the controlling administrative body is the Pharmaceutical Society of Great Britain 17 Bloomsbury Square W C 1 Ireland has a separate statute and a separate Pharmaceutical Society

Preparation The chief requisite for any person desiring to obtain a qualification in pharmacy is a sound elementary education The boy or girl intended for the calling should have his or her final period of school life devoted to the subjects demanded by the Regulations of the Pharmaceutical Society (see *References*) Any one of average intelligence and industry should be able on leaving school to obtain a valid certificate from any one of the recognized examining bodies specified in the Official Regulations of the Pharmaceutical Society A copy of these Regulations may be had gratis from the Secretary of the Society and their contents furnish detailed directions which cannot appropriately find a place in a brief article such as the present When such a certificate has been obtained and before seeking a period of service with a pharmacist the aspirant should register with the Society as a 'Student or Apprentice No candidate can be admitted to the qualifying examination who does not furnish evidence of having been practically engaged for three years in the translation and dispensing of prescriptions and it is obvious that considerable importance attaches to this period of pupilage It need not be an actual apprenticeship but it must be a real engagement and a practical one

During pupilage or apprenticeship systematic study in the technical subjects of the curriculum should be followed The terms of engagement should provide for time being allowed for such studies and in most towns in Great Britain facilities exist in the shape of technical institutes polytechnics and similar bodies where classes in Botany Chemistry and Physics suitable for pharmaceutical students are provided at convenient times for nominal fees But whatever course may be determined upon the student's work must be systematized and coordinated, or it will be largely valueless The publications mentioned in the "References" hereto will be helpful as a guide, but, broadly speaking the first year of pupilage might embrace elementary Botany, Physics, and Chemistry, the second and third years Materia Medica and Pharmaceutics, concurrently with Practical Chemistry finishing up after pupilage with a whole-day course of six months at one of the many excellent schools and colleges of Pharmacy in London Edinburgh, and the chief provincial centres

Examination The statutory examination for a Pharmacist or Chemist and Druggist is in two parts (*a*) Chemistry and Physics occupying one whole day, and (*b*) Botany, Materia Medica, Pharmacy, and the laws relating to the Sale of Poisons occupying another day Candidates must be of the full age of 21 The examination fee is ten guineas, and successful candidates acquire the statutory right to the professional titles above mentioned An Honours Examination—the Major—covering advanced knowledge in Chemistry, Botany and Pharmaceutics confers the title of Pharmaceutical Chemist but is not obligatory for carrying on the business of a chemist and druggist

Prospects Pharmacy as a career has not hitherto ranked so high in general estimation as the educational training demanded of its practitioners would lead one to expect One reason is to be found in the anomalous condition of Medicine and allied professions in this country Any one may dabble in Medicine or Dentistry provided he does not use a prohibited title similarly, the actual practice of Pharmacy is without State regulation, though the professional titles are protected by statute But as every department of pharmaceutical work depends upon the application of science to practical purposes the fact cannot fail to be recognized sooner or later and when it becomes the main principle of national life—and public opinion is moving rapidly in that direction—that sound scientific knowledge must be the basis of the Arts and Crafts the pharmacist will find an immensely increased field for his qualification The Government has already indicated its sense of the public value of pharmaceutical qualification by restricting dispensing under the National Health Insurance Acts to persons registered under the Pharmacy Acts as pharmaceutical chemists or chemists and druggists and this logical sequel to the legislation of 1868 will constitute the basis of any extension of the provisions made for dealing with matters affecting public health In many directions pharmacy affords splendid opportunities for women and many are filling important positions in both retail and wholesale spheres and in hospitals and institutions some even successfully and acceptably carry on business on their own account It is most essential, however, that those women who contemplate a pharmaceutical career should be properly advised at the outset, so that the aspirant should not be misled into taking an 'easy' or short course to find too late that she is in a 'blind alley' occupation from which there is no escape There is no short cut to qualification and anything less than the statutory certificate under the Pharmacy Acts is a delusion

Cost The cost of obtaining the certificate will naturally vary but roughly it may be estimated at from £150 to £250 in all the amount may be reduced in cases where it is possible to earn something during the period of pupilage

Pay Qualified pharmacists can command anything from £250 and upwards as assistants or managers and their financial value is increasing yearly as the demand for their services grows and recognition of their technical importance extends

A J C

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Syllabus of Examinations (Published at 17 Bloomsbury Square, London, W C 1)

The *Pharmaceutical Journal* and the *Chemist and Druggist* each contain educational articles from time to time

PHARMACEUTICAL SOCIETY OF GREAT BRITAIN, THE —This was established in 1841 "for the purpose of advancing Chemistry and

Pharmacy, and promoting a uniform system of education of those who should practise the same and also for the protection of those who carry on the business of chemists and druggists" A second object was to provide a fund for the relief of distressed members and widows and orphans of members The origin of the Society was due to recognition of the need for education and registration of chemists and druggists The Society became firmly established under a royal charter in 1843 in which a condition was laid down that persons not then in business on their own account should be required to be examined before being admitted to membership of the Society

In 1852 and 1868 the charter of the Society was confirmed by Pharmacy Acts, which defined more specifically those who were entitled to admission as Members or Associates In consequence of the provisions of the Act of 1868 the Society consisted of three classes—

Members Persons registered as pharmaceutical chemists or as chemists and druggists by being in business before 1868

Associates Persons registered as chemists and druggists after examination

Students Those registered as having passed a suitable preliminary examination

The Pharmacy Acts Amendment Act of 1898 changed these classes to two Members and Student Associates the latter class including persons who have been registered as students or apprentices and who have passed an examination similar to the Universities Matriculation or Senior Local, provided the subjects taken included English arithmetic, algebra and geometry A fee of two guineas is charged for registration

To be registered as an Associate a candidate must have been a registered student or apprentice must be 21 years of age and must have received a systematic course of instruction for at least six months in chemistry botany and materia medica He must then pass the two examinations—

PART I Botany Chemistry and Physics

PART II Materia Medica Pharmacy including Posology and the Translation and Dispensing of Prescriptions the law relating to the keeping selling and dispensing of poisons and poisonous substances

A candidate for Part II of the Qualifying Examination must produce a certified declaration that for three years he has been practically engaged in the translation and dispensing of prescriptions

The School of Pharmacy provides courses of study for students who are preparing themselves for the two examinations and who may enter the school at any time

The organs of the Society are the *Chemists' Annual* and the *Pharmaceutical Journal*

The offices of the Society are 17 Bloomsbury Square London W C 1, and 36 York Place Edinburgh

PHILANTHROPY IN ENGLISH EDUCATION — Philanthropy connotes action that proceeds from the free will of the agent without any claim of legal right on the part of the beneficiary So long as the State assumed no responsibility for education, schooling necessarily depended either upon self-interest and individual means or upon the charity of others Any doubt that an alert self-interest and a quickening of philanthropic sentiment were inadequate to meet the needs of national education was never seriously entertained in England until the nineteenth century It was the growing belief that universal schooling was essential to the advancement of every social good and that education was a right of the people—the first fruits of which were seen in the Education Act of 1870—that resulted in relegating philanthropy to a position of secondary importance in extending and financing English education

The debt this country owes to philanthropy can hardly be overstated The poor clerks of mediaeval Oxford—"pauperes ex eleemosyna viventes", the free grammar schools founded both before and after the Reformation, the charity and "working" schools of the seventeenth and eighteenth centuries the monitorial infant and Sunday schools of the nineteenth century the numerous endowments bestowed on schools and colleges by generations of "pious benefactors' remind us of the venerable character and the continuity of philanthropic endeavour the catholicity of its range, and the diversity of its means of expression Nor has this beneficent work ceased with the growth of State action Rather it continues to perform invaluable service in supplementing and paving the way for more extended State provision by providing facilities for experiment, by educating public opinion and by opening up new fields of endeavour The endowment funds of the modern universities from which in 1914 some 17 per cent of their income was derived the founding of new medical schools the equipment of technical colleges and numerous social experiments, are typical of philanthropic activity in the sphere of education at the present time

Motives Philanthropy is necessarily sporadic and uncertain in its incidence and highly sensitive to prevailing religious social and economic aspirations A quickening of religious life the growth of superstition or of denominational rivalry the fear of State interference, the rise of new social and economic problems war and pestilence, have each in turn directed the minds of men to the endowment of education Thus the ravages of the French wars and the Black Death by creating a dearth of clerks gave an impulse to the founding of grammar schools and to increasing the opportunities of obtaining a university education The commercial magnates of the fifteenth century confronted with new economic conditions were moved to provide for the education of their neighbourhood The urgent need for extended facilities for higher education in the nineteenth century led to the endowment of new public schools and provision being made for the education of girls and women The circulating schools of Wales the Sunday school movement, and the eighteenth century charity schools are so many expressions of a quickening of religious activity Similarly the large contributions of philanthropy to elementary education during last century were evoked in no small degree by denominational jealousies and the fear of State control

Purposes The history of philanthropic activity falls broadly speaking into two periods It is characteristic of benefactions prior to the Reformation that the religious purpose of the endowment generally outweighs the educational The gilds chantries hospitals, and the like founded after the Conquest made in the bulk, no mean provision for elementary and higher education, but the immediate



The Sorbonne, Paris

PLATE LXXI

purpose of their founders was to provide for the continual offering of prayers for their own souls and others of the faithful departed oftentimes a work of greater import—as Archbishop Chichele reminded the scholars of All Souls College Oxford—than the pursuit of knowledge After the Reformation on the other hand though the spiritual benefit likely to accrue as the result of well doing is not overlooked the educational motive in attacking some particular social problem—pauperism changing economic conditions the growth of irreligion of revolutionary tendencies and the like—tends to predominate and with it goes a greater emphasis on the value of useful learning

In this charitable work the Church has from the outset occupied a unique position To provide for the needy the things which both concern the maintenance of the body and tend to the profit of souls has been regarded from the coming of St Augustine as one of its fundamental obligations Indeed the provision of education was considered by the more enlightened clerics as a greater charity than the giving of bread It was the importance of insuring a due supply of men to serve God in church and State that made school keeping an essential activity of every cathedral and collegiate church that turned the doctrine of vicarious atonement to educational ends and made benefactions for this purpose an acceptable means of appeasing the anger of the Church The indifference of the regulars presents a striking contrast

After the Reformation there is a great broadening of philanthropic activity Lay committees like the Committee of Burgesses at Sheffield vestries and the like are found contributing indiscriminately from public and private funds and from rates to the work of education Later towards the end of the seventeenth century the subscription list began to be a favourite philanthropic instrument The field of potential effort was enormously extended for henceforth the contributions of people of moderate means served to supplement the benefactions of the well to do

If it be asked what provision was made by philanthropy for the child of what is nowadays called the working man the answer is that of deliberately organized means there was practically none until after the Reformation Working class education only began to receive the attention of the philanthropic as a means of checking irreligion and the alarming growth of pauperism that followed the dissolution of the monasteries and the rise of new economic conditions in the sixteenth century That it began to receive serious consideration in the eighteenth and more especially in the nineteenth century was due in no small measure to the elasticity and popularity of the subscription list alike at the dictates of expedience and public duty C BIRCHENOUGH

PHILIPPINE ISLANDS, EDUCATION IN THE — Previous to the occupation of these islands by the American Government in 1898 they had been ruled by Spain for upwards of 300 years In the late fifteenth and early sixteenth centuries bands of Jesuits Dominican and Franciscan missionaries began the conversion of the native population and established schools in connection with the churches and convents they erected A system of primary education was carried on in the native language and teaching was directed mainly towards the study of religion Higher schools were established to train students for the priesthood In 1645 the Dominicans obtained a Papal Bull for the establishment of a university which conferred degrees and at first taught arts and philosophy afterwards law and medicine Until late in the nineteenth century, education remained in the hands of the Church and no system of national education was established until 1863 when the Spanish Government prepared a scheme of elementary instruction which was to be both free and compulsory A normal school was established at Manila local schools were supported by local authorities and local inspectors were appointed This scheme was in operation when Spain ceded the islands to America in 1898

Under American Rule Under the new government the schools were at first conducted by the military authorities and instruction in the English language was at once introduced The Philippine Commission in 1900 made an inquiry into the state of education in the islands and enacted a school law which established free secular education based on the English language and controlled by a Bureau of Education Priests ceased to teach in schools except for religious subjects co education was allowed and normal and trade schools were established Evening schools were opened for students over school age At present the primary schools are educating more than half a million pupils The course as laid down in 1906 includes four years in the primary school which may be followed by three years in the intermediate and four years in the secondary school Besides the usual elementary subjects hygiene citizenship and industrial work are included The intermediate schools have about 25 000 pupils and secondary schools one in each province are erected as the development of population requires Attendance is voluntary in all classes of schools The Normal School at Manila is devoted to the training of teachers American teachers are numerous and are increasing at the rate of about a hundred a year Higher education was established by an Act of the Philippine Legislature in 1908 and the University of the Philippines provides courses in arts law medicine engineering and veterinary science There are also many prosperous private schools

PHILLIPS, SIR THOMAS (1801-1867) —He was born at Llanelly and from 1824 to 1840 practised as a solicitor at Newport He was injured while acting as a magistrate during Chartist riots and knighted for his services in maintaining order From 1842 he practised in London in Parliamentary committees and in arbitration cases In Monmouthshire he acquired landed property and coal mines and bestowed much of his wealth for the improvement of education in Wales He travelled much in Wales visiting towns and many secluded spots collecting information on the condition of the people which he published in a book on *Wales and the People Considered in Relation to Education* (1849) He became one of the first and chief directors of the Welsh Committee of the National Society and to him was due the founding of the Carmarthen Training College and the application of charities to orphan schools at Llandaff He was a strong advocate of sound religious education and secured the aid and sympathy of the great iron and colliery proprietors in his work

PHILOSOPHY IN RELATION TO EDUCATION —Philosophy conceived as love and pursuit of wisdom was originally co extensive with man s search for truth But as that search succeeded the need for specialized effort became increasingly imperative for neither man s intellectual powers nor his length of days kept pace with his growth in knowledge First the whole realm of the material world broke away and what had been known as natural philosophy began to arrogate to itself the name of science Gradually developing its own inductive method it applied with ever increasing thoroughness its fundamental postulates of uni formity law and mechanism Then it extended its scope to man So the inductive treatment of empirical data has become a recognized method of dealing with human action both in the individual and in communities In psychology ethics politics economics aesthetics the movement extends When it is claimed that such methods and postu lates are appropriate to the examination not only of the material aspects of conduct but also of the spiritual aspects—that they are indeed the only ones that can give real knowledge—then physical science claims to become philosophy and offers an inflexible mechanism as the ultimate explanation of all things including human life

To many minds such a theory fails to explain the most intimate characteristics of experience— the intuitions of free initiative and of responsibility for its exercise the bonds of sympathy between men in short all that we most definitely mean when we think of ourselves as living spiritual beings They demand a philosophy which shall accept such intuitions as the ultimate bases of certainty and by developing their implications reach an answer to the fundamental questions as to the ultimate nature of existence and knowledge and the relation between them These are the traditional problems of pure philosophy in its two allied branches of metaphysic and epistemology

To these questions the scientific materialist gives the answer we have already indicated At the opposite pole the idealist offers the answer that not matter but mind is the ultimate reality and that in consequence existence and knowledge are identical for existence is only presence in some consciousness either that of an individual or that of an absolute and universal mind More recently under the impetus to thought given by the doctrine of evolution a new trend has been imparted to philosophy Reality is no longer conceived as an unchanging substratum — whether material or spiritual—of the ever changing phenomena of experience but is sought in experience itself as the only reality directly open to us So life is conceived as a constant activity and free originative power as the motive force which uses mechanism both in the material world and in the spiritual life as its instrument

The Solution of Ultimate Problems To examine the many forms of these classes of olution of the great ultimate problems would be to write a history of philosophy The question before us is the simpler one of how they bear upon education In so far as they influence its practice it is either through theory consciously applied which obviously depends on philosophical views of the nature of life and of knowledge or through the largely unconsciously accepted views of the relative values of the aims and activities of life that form the spiritual atmosphere in which each child lives and grows Not as clearly held doctrines but as attitudes of mind do the views of philosophers enter into this potently formative universe of thoughts evaluations beliefs and aspirations Its composition is complex and the factors that constitute it can neither be indicated nor weighed with any precision They are always changing though so slowly that the process is apparent only when those dominant at one period are compared with those dominant at another Advance of positive knowledge and its applications to human purposes estimates of practical men of affairs products of all forms of art religious beliefs—all are there and they make it easier or more difficult for various philosophical theories to find practical acceptance Those that harmonize with its general trend are received with various degrees of understanding and through various forms of propaganda Those that are incompatible with that trend meet with welcome from but few So it is possible that the practical philosophy of the people which is the most potent formative influence on the young may diverge widely from the theoretical conclusions of con temporary philosophers For example Kant s insistence on an inexorable but abstract law of duty combined as it was with an absolute divorce between duty and pleasure had little influence on the general consciousness In spite of Kant educa tion both in theory and in practice has increasingly left duty on one side and devoted itself to the search for the pleasant In this it has of course been in agreement with other conscious aspirations of life and the whole was in harmony with that material istic and hedonist philosophy which was so con gruent with the most powerful forces in the social life of the eighteenth and nineteenth centuries

Yet it is obvious that on the prevalence of a true philosophy depends the value of education Schools can make for the improvement of the race only in the degree in which their efforts are consciously directed by higher views and truer estimates than are current in the community yet not out of touch with them for then as has been seen but faint response is evoked It therefore behoves all who have control of education to weigh the answers to the riddle of life offered by the great schools of philosophy For education can be effective only when it has a clearly conceived aim which implies decision as to the ultimate nature of life and a clearly conceived doctrine of means which involves deciding whether life is a freely determined activity seeking its own ends and gathering knowledge in relation to those ends or a mechanically determined reflex to its surroundings passively receiving know ledge and that mainly for its own adornment And these are questions only to be answered by philosophy J WELTON

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PHONETICS IN EDUCATION, THE USE OF — Phonetics is the science of pronunciation It is of

use educationally in the following ways (1) in the teaching of foreign languages (2) in the teaching of the mother tongue including (*a*) the teaching of 'good English to those who speak undesirable dialects (*b*) the curing of speech defects (*c*) the teaching of the deaf and dumb (*d*) the teaching of elocution and singing (*e*) the teaching of reading to infants (3) in the study of philology (4) as an educational training in itself

We will examine these various uses of phonetics in order

The Teaching of Foreign Languages It is now generally realized that correct pronunciation is essential for any one who wishes to speak a foreign language well It has moreover been abundantly proved by experience that the old method of trying to pick up pronunciation by mere imitation is in most cases a complete failure The science of phonetics enables us to overcome the difficulties which the pronunciation of foreign languages presents

The work of learning to pronounce a foreign language falls into three main parts (1) it is necessary to learn to form every speech sound occurring in the foreign language (2) when the speech-sounds have been acquired it is necessary to learn to use them in their proper places in connected speech and (3) it is necessary to learn to pronounce with accuracy and rapidity the groups of foreign sounds which make up words and sentences

The first difficulty is got over by making a study of *phonetic theory* (*i e* by ascertaining the positions in which the tongue and other organs of speech must be placed in order to produce the foreign sounds correctly) By using this knowledge it is possible to devise exercises which will enable the learner to get his organs of speech into the foreign positions

The second difficulty is overcome by making use of a special system of writing in which one symbol is assigned to each foreign sound when the foreign words are written down on this principle the student cannot be in any doubt as to which sounds have to be used in the words When connected texts are written on the one sound one symbol principle they are said to be written in *phonetic transcription* Phonetic transcription is particularly necessary in learning to speak languages (*a*) in which the conventional spelling does not show unmistakably which sounds are required (*e g* French or Danish) (*b*) which have complicated systems of writing (*e g* Arabic or Hindi) and is indispensable in languages where the conventional writing does not indicate the pronunciation at all (*e g* Chinese)

Rapidity of enunciation of foreign sound groups is attained by *constant repetition of selected sound groups* (graduated)

A simple example of the method of teaching a foreign sound is offered by the French sound of *u* as in *tu lune* This sound is often pronounced atrociously by English people but it is an exceedingly easy sound to acquire if practised in the right way All that is necessary is to hold the lips in the fully 'rounded position and then endeavour to pronounce as nearly as possible the English sound of *ee*

Many other sounds usually considered difficult turn out to be easy if tackled in the right way Such are the French sounds of *eu é è* German *ch* in *ich* Welsh *ll* Spanish *b* Indian "cerebral *r* Japanese *f* Likewise those English sounds that are considered difficult by foreigners may easily be taught if the right methods are adopted (*e g* the sounds of *th w a* in *man*, *ir* in *bird*)

As an instance of the use of phonetic transcription we may take the French words *table* and *fable* In Parisian French they have different vowel-sounds the first being what is technically known as front **a** and the second being 'back" **a** In phonetic writing, each of these two sounds is provided with a symbol and the pronunciation indicated by the notation [**tabl**], [**fa bl**][1]

The differences between many other pairs of similarly spelled foreign words are best shown by transcribing them phonetically *e g* the differences between the French *ville* and *fille* German *herein* and *Verein* Italian *pozza* (pool) and *pozzo* (well)

Phonetic transcription is likewise of the greatest use in teaching foreigners the proper distribution of the English sounds Thus the proper pronunciation of the *ough* words, the differences between *read* (present) and *read* (past) *lead* (conduct) and *lead* (metal) *tear* (of the eye) and *tear* (rent) *laughter* and *daughter* the different values of *a* in *gate cat calm what all any china* etc etc are best shown by means of a phonetic transcription

Again it is practically impossible for a foreigner to master the proper use of the strong and weak forms of such words as *from have and but of can* without using phonetic transcription He has for instance to learn that the *can*'s in *Can I ? Nor can I* have different vowel sounds

The rules for the use of such strong and weak forms are so complicated that no foreigner could be expected to learn and remember them But by continual reading of phonetic texts the foreigner gets to know instinctively what cases require (*a*) strong forms and (*b*) weak forms

The principles of phonetics and phonetic transcription (as applied to the well known European languages) are now being put into practice in many of our best schools Phonetic methods have the approval of the Board of Education (see Circular 797) and they are strongly recommended in the Report of the Government Committee on Modern Languages 1918

A beginning has also been made in applying the same methods to remoter languages in Asia and Africa but much research still remains to be done before the teaching of these languages can be placed on a really satisfactory basis What is particularly necessary at present is that all missionaries and others who have to learn remote languages should have a sound training in general phonetics they will then be in a position to analyse for themselves the pronunciation of the languages they have to learn and will be able to devise their own exercises for learning the difficult sounds

The Teaching of the Mother Tongue (*a*) Teaching Good English Pronunciation Most education authorities have the fixed idea that certain forms of English pronunciation are 'good' and that others are 'bad' and that children who do not naturally use "good" pronunciation should be taught it in school This is not the place to discuss the question whether these education authorities are right or wrong We will content ourselves with outlining the principles that should be followed by the teacher who has decided that he wishes to make his pupils change their pronunciation

[1] Letters enclosed in square brackets [ ] are phonetic symbols International Phonetic System)

In what follows, we assume that the teacher s pronunciation is the one to be taught

Differences between the pronunciation of the pupil and that of the teacher fall into two classes (1) cases where the pupil replaces the teacher s sounds by other sounds not occurring at all in the teacher s pronunciation (2) cases where the pupil uses the sounds of the teacher s pronunciation but distributes them differently in connected speech

The London elementary school teacher will probably find discrepancies of the first kind in the pronunciation of such words as *too down* he will find discrepancies of the second kind in the speech of pupils who pronounce *February aerated deteriorate* as if they were written 'Febyueiry airiated' "deteriate

The teacher s pronunciation may be imparted to the pupils by methods similar to those used in teaching the pronunciation of a foreign language

Thus the teacher s sounds may be taught to pupils who are unable to form them by making use of a knowledge of the exact positions which the tongue (or other parts of the organs of speech) should occupy in order to produce the teacher s sounds If for example the teacher wishes to get a "Cockney' child to produce the vowel sound [u][1] (for subsequent use in such words as *too food*) he may do so (1) by telling him to make a sound intermediate between the values he (the pupil) gives to *oo* and *aw* or (2) by telling him to put his mouth as if he were going to whistle a very low note or (3) by telling him to feel with his finger where the tongue is when he says [ɑ][1] and then telling him to repeat his sound of *oo* keeping his tongue as nearly as possible in that position

When the sounds themselves are pronounced as the teacher wishes but their distribution in speech is different from that which he desires the teacher s mode of using the sounds may be taught by transcribing words phonetically

Curing Speech Defects Individual defects such as lisping defective pronunciation of **l** or **r,** may likewise be dealt with without difficulty by the phonetically trained teacher In dealing with such cases the best plan is generally to use a tongue guide (small bone paper cutters do very well for this purpose) with which the teacher either places the child s tongue in the correct position or prevents it from going into the incorrect position

Teaching the Deaf and Dumb A knowledge of phonetics should be regarded as indispensable by those engaged in teaching the deaf and dumb to speak The pupils in this case have to be guided solely by the eye and by muscular sensations It has been shown (*e g* by Forchhammer and Graham Bell) that the sense of muscular movement can be developed in deaf and dumb people to an astonishing extent if their teacher knows phonetics well and knows how to apply his knowledge [For details as to the use of phonetics in this connection readers are referred to Graham Bell s *Mechanism of Speech*]

Teaching Elocution and Singing Pronunciation varies according to the rate of speaking and the circumstances under which a person is speaking Thus the word *and* might often in recitation be pronounced to rhyme with *land* even when unstressed but the *and* in a common expression such as *bread and butter* is usually pronounced simply **n** Students of elocution ought to be thoroughly familiar with the differences between the conversational style of speech and the styles suitable for recitation etc Familiarity with these differences can only be attained by a study of phonetics

Similar considerations apply to singing The pronunciation of English used in singing by good singers differs from the most careful style of pronunciation used in speaking and differs still more from that used in ordinary conversation Students of singing only too often endeavour to acquire merely by imitation the special forms of pronunciation recommended by their teachers The same result may be obtained more easily and more surely by making a study of phonetics (See also ELOCUTION THE TEACHING OF)

The Teaching of Reading It has been shown by many experiments that the teaching of reading to infants is much facilitated by the use of a phonetic transcription in early stages It has been shown that children who have been taught in the first instance to read and write phonetic transcription exclusively and have subsequently been taught conventional spelling in the end spell better than children who have learned reading and writing in the usual way It has moreover been shown that children who have been taught on this method possess a more extensive vocabulary than other children and are quicker in recognizing the meanings of written words in fact that they are ahead of other children in general mental development Those who are interested in this subject should consult the works mentioned in the References

Philology All philology is necessarily based on phonetics Philology is the history of spoken words and it is evident that no one can study this subject who does not know how words are spoken Without phonetics philology degenerates into a mere history of spelling (*i e* a history of the attempts people have made to represent spoken words in writing) The futility of trying to study philology without phonetics becomes apparent if we remember that past attempts at spelling have been on the whole very inaccurate and inconsistent that many changes in spelling did not correspond to any changes in pronunciation while many important changes in words have remained entirely unrecorded in spelling

An example of a remarkable change not shown in spelling is found in the development of such words as *while time* during the last 500 years It can be shown by phonetic considerations that the word *while* was at one time pronounced like the modern *wheel* and was at a subsequent period pronounced like the modern *whale* it is also possible to trace intermediate stages between these forms and to fix the approximate dates at which the different stages were reached Such research however could not possibly be done by any one who was not a trained phonetician in fact the bare facts cannot even be appreciated by a person who has no knowledge of phonetics

It must be remembered further that philology deals to a considerable extent with periods when writing was unknown in such cases there cannot be any question of anything but sounds and the problems can evidently only be dealt with by experts on speech sounds

Phonetics as an Education in Itself The science of phonetics offers a wide scope for training the observing faculties generally It trains not only the articulatory muscles but also the ear the eye and the hand The branch of phonetics known as

[1] Letters enclosed in square brackets [ ] are phonetic symbols (International Phonetic System)

Experimental Phonetics is of special educative value apart from its applications Experimental Phonetics consists in analysing pronunciation minutely by means of special apparatus It requires a knowledge of physics and mathematics and is therefore well suited for the purposes of general scientific training Those who are interested in this branch of the subject should visit the Experimental Phonetics Laboratory at University College London where further details may be obtained D J

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THE APPLICATION OF PHONETICS TO LANGUAGE TEACHING

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PHONETICS IN THE SCHOOL—It must be assumed here that the teacher has himself some acquaintance with phonetics The course for children must be very simple and very practical It should aim at making the pupil realize some of the most important facts connected with his own pronunciation and the appeal must be made both to the ear and to the muscular sensations which arise in the specific use of the vocal organs It is perfectly easy to teach a child to recognize some of the most fundamental movements of the organs of speech Thus the different activities of the glottis in voice and breath the difference of sensation informing a stop or an open consonant the distinction between the use of the point and the back of the tongue the formation of the lip and lip teeth consonants are points that can all be readily studied in a practical way and should offer very little difficulty Passing to the formation of vowel sounds the process of "rounding' is probably the easiest to begin with because it can be **seen,** as well as **felt** If the child can further be got to realize that he uses the **back part** of the tongue in pronouncing the vowel of *cart* and the **front** in uttering the vowel in *heat* this is enough at the elementary stage Easy exercises should be devised to familiarize the learner with those simple positions and movements of the speech organs which it is proposed that he should study or rather since these positions and movements are already habitual, the exercises aim at making the child fully conscious of these familiar activities The next step is to compile a list of all the vowels and consonants in use in the speech of the members of the class If a phonetic notation be not used these must be written down in ordinary spelling with a key word to illustrate each sound Thus "The *ee*-sound as in *meet*" etc It is very important that the teacher should not himself use or allow his pupils to use, in class such inaccurate and misleading expressions as "the *a* sound in *hall*" [ðɪ eɪ sound ɪn hɔl] When speaking of and describing a sound, the teacher should pronounce it properly—as [ɔ], "*aw*'—and not refer to it **by the name of the letter which happens to express it** in certain words in our very imperfect system of spelling

Enumeration and Classification of Sounds In enumerating the sounds of English, as in the general study of speech sounds it is best to begin with the consonants as it is easier to vocalize the movements and positions upon which these depend than to determine the tongue positions which result in vowel sounds The sounds when enumerated should be classified so far as the instruction previously given will permit That is to say, the consonants may be divided into voiced and voiceless stopped (stop consonants) or open lip, lip-teeth back and point consonants the vowels may be classed according to whether they are rounded or unrounded back front or flat The teacher must use his discretion as to how far he will attempt a more detailed classification The chief thing to avoid is to give children mere names which express no realities for them Thus it is worse than useless to teach a child that the initial consonant in *thin* is a point teeth open voiceless consonant unless he has realized with perfect clearness that, in order to make this sound he must produce friction between the point of his tongue and his teeth and keep his glottis open so that the vocal chords do not vibrate It is a good thing to get beginners to **think** of a given familiar sound **without uttering it aloud,** and to analyse carefully the positions into which the organs involved naturally pass The next stage is to learn to put the tongue and lips into a desired position without reference to the sound which will result A teacher may say 'Put the point of your tongue against (or just between) the teeth so as not to close the air-passage completely and close the glottis for voice Get these things done and keep the organs in position for a moment Now drive the air stream through the mouth preserving the positions and note what sound you get' If the operation is carried out accurately the result is the initial consonant in *this* Such a simple process as voicing a voiceless open consonant and unvoicing a voiced may be practised with advantage similarly the opening and closing of the passage from the throat to the nose while preserving continuously the position of [*b*] or [*d*] or [*g*] may be practised These and other exercises of like nature bring home the organic relations of sounds

Incidentally it may be remarked that this elementary phonetic training has great practical use in correcting defective utterance of the native language and may be turned to good account in learning the pronunciation of foreign tongues

Combinative Changes in English When some proficiency has been gained on the lines suggested above the class may pass on to observe some very important phenomena in their own speech namely, the influence of **stress** or emphasis on sounds, and the influence of one sound upon another which occurs in connection with it in the word or sentence

Very few examples must suffice for our present purpose The pronoun *he* when strongly stressed, is pronounced with an initial aspirate and with a fairly long vowel When it occurs in an unstressed

position in the sentence, the vowel is shortened, and the initial aspirate often disappears All the pronouns are liable to this alteration of form according to whether stress falls upon them or not, and the same is true of auxiliary verbs and of prepositions Contrast (*e g* the form *of*) in ' What s it made *of* ' with " It's made *of* wood ' In the latter instance instead of the short full *o* sound we get that most common vowel, in unstressed syllables in English which is often known as the " obscure vowel ' A very slight observation of natural speech will reveal the universal occurrence of this sound in words or syllables when unstressed As an example of the influence of one sound upon another we may cite the difference of the plural suffix in *pigs* and *ducks* respectively After the voiced consonant in *pigs* the suffix is also voiced and becomes [z] after the voiceless consonant in *ducks* the suffix is unvoiced To these and to thousands of other examples of a similar kind the attention of the class may be very definitely directed We have here what we know as **combinative sound changes,** actually in operation in contemporary speech Changes of this kind—that is changes wrought by differences of stress and by the influence of other neighbouring sounds—have played a very remarkable *rôle* in the history of English at every period Many phenomena which still survive in our grammar are the results of combinative changes which took place in bygone ages The study of the combinative changes which are operative in everyday speech is therefore an important and essential preparation for a proper understanding of the history of English

H C W

PHYSICAL EDUCATION OF BOYS DURING SCHOOL LIFE, THE —The purposes of physical education can be considered from the point of view (1) of natural development (2) of remedying physiological defects (3) of training in the art of defence and offence

Since school life involves a considerable concentration of effort and subsequent fatigue it is well to include the recreational activities such as games in any review of Physical Education A complete system of physical training such as is required in a high grade or grammar school with boys whose ages range from 12 to 19 needs to take into account all the physical activities of school life and co-ordinate them with medical inspection for recreation is essential to development Statistics clearly show that in any considerable number of children, departures from a normal standard of power and stamina are so common particularly during childhood and adolescence that proper development can only be secured for all when individual differences and defects are adequately recognized Whether the extension of military training be compulsory or not the responsibility of the school for preparing for such special training by adequate physical activity is undoubted

For young children up to the age of 11 or 13 playground games which quicken sense reaction and establish a rapid co-ordination of sense and limb and also strengthen the circulation and breathing capacities while allowing frequent intervals of rest are essential Many books on playground games are now published These games need supplementing by Swedish drill to induce body balance and arouse the consciousness of pleasure in movement and effort which seems to be absent in certain children Some training in vocalization and adequate breathing, especially in the open air is also essential In early childhood, the emotional accompaniments of sound are particularly active and form powerful incentives Hence the need for the early cultivation of musical faculty If training in vocalization is omitted, or allowed to fall in abeyance the subsequent development of the language faculty may be seriously restricted Dancing and attention to body rhythm are also very essential parts of early physical education

About the age of 12–14 generally at the latter age the boy becomes capable of such sustained effort that he can be trained to feats and exercises involving some endurance such exercises however should be kept well within his powers of recuperation It is here that special provision must be made for such boys as manifest any signs of strain of heart or lungs for imperfections that are unrecognized by medical examinations often manifest themselves in action

The Activities of the Gymnasium, the Swimming Bath, and School Games Although it is not at all the object of physical training to produce trained gymnasts either singly or in teams yet each school needs to have access to gymnasium and swimming bath which should be worked in association with outdoor activities such as school matches form games etc and also in connection with Officers Training Corps and Scout organizations

In the gymnasium exercise is to a considerable extent independent of weather Records of attainment and physical progress can conveniently be taken there and should be considered in connection with physical growth For the purpose of estimating normal growth a single comparison with the averages of a large number of widely different children though frequently used is of little value The growth of each boy must be taken in connection with his own past record Consequently an individual series is alone of value It is however convenient to establish certain arbitrary standards and after assigning a boy to a particular standard at one age we can judge whether he improves or falls back from his previous standard or grade of height weight and chest girth

Physical training should be grouped so that each part of the year has its appropriate scheme The physical activities at the Manchester Grammar School are arranged in the following way (1) Winter sports and games till Easter (2) training for athletic sports between Easter and Whitsuntide (3) summer games such as cricket till the summer holidays (4) camps during the three holidays—Winter, Whitsuntide and Midsummer

The gymnasium work and swimming continue through the year except in mid-winter

Every boy unless physically debarred should learn to swim both for his own sake and for that of his fellows It is important that the temperature of the water in the swimming bath should not be below 68° or 70° for boys under 14 Swimming is most appropriately taught about the ages of 12–13 The conditions which require special restrictions if not absolute abstention in regard to swimming lessons are weakness of heart or lungs discharge from ear (or perforated ear drum) rupture parasitic skin disease, and unsightly though non-infectious skin diseases on account of which the boy is liable to comment by his fellows Thin and tall boys do not stand cold water as well as stout,

TABLE OF STANDARDS OF ATHLETIC ENDURANCE FOR TOWN BOYS

Type of Standard—	Ages 11–13	Ages 13–15	Ages 15–17	Ages 17–19
Long-distance Competition	100 yds	220–444 yds 80 secs	880 yds or easy harriers 30 mins	1 mile race or harriers 6 mins
Short distance Running	50 yds in 8 sec	60 yds in 9 sec	100 yds in 13 sec	100 yds in 12 sec
Broad Jump Running	12′	13′	14′ 6″	16′ 6″
High Jump Running	3′ 3′	3′ 10′	4′ 3″	4′ 8″
Gymnasium Free Work	Recreational Drill Standing Exercises Balancing body on beam Co-ordination	Recreational Drill Knowledge of Swedish Movements Response, and Command Co-ordination	Drill begins to be strenuous Morris Dancing Wand Exercises	Drill to be more strenuous and complex
Apparatus Work	Climbing the Rope Elastic Ladders and Row of Rings	Parallel Bars Horizontal Bar muscle up once Row of Rings	Vaulting on Horse Muscling up three times Slow Circles under and over Bars	

well covered and muscular boys The cold plunge bath in the morning at a low (town s water) temperature should not be enforced with the swimming bath for children

Standards of Attainment in Physical Prowess serve (1) to focus physical training to notice its failures and to place it on a level with the teaching of other subjects (2) to commend effort to stimulate emulation and to mark efficiency Such standards may be for measuring power for measuring endurance or for measuring skill

Standards of Power These consider the actual force that can be exerted by a group of muscles when performing one particular action Muscular force can be measured by the pull or the push of a dynamometer the blow of a hammer or the lifting of a weight Although of some interest for exhibition purposes and for certain scientific purposes particularly in the study of fatigue such measurements have no application to education and are probably of very little use in the training in the art of self defence Indeed, the concentration of attention on the development of muscular power in limited directions may lead to very misleading conclusions and may divert attention from the proper cultivation of the internal organs heart and lungs which are far more important than bulk of muscles

Standards of Endurance These consider the amount of energy available for a consecutive series of actions They concern not only the muscular force put forth in a single action but the capacity for maintaining respiratory exchange and power of the circulation during continued effort Measurement by them is very useful for it enables the instructor to judge of the success or otherwise of the physical training in a way similar to that of an ordinary school examiner of intellectual performances These tests soon become mixed with those of skill and can then be measured as " Proficiency Tests '

Standards of Proficiency In Swimming At the Manchester Grammar School attendance at the swimming bath is compulsory The number of boys who pass the proficiency test is noted Each boy to render himself efficient has to show that he can swim a distance of 100 yds on his breast and 50 yds on his back If he wishes to qualify for the Elementary Certificate of the Royal Life saving Society he has to show he can swim a distance of not less than 50 yds on the breast and 25 yds on the back that he can dive to pick up an object in the water that he can prove himself able to perform the several methods of rescue the methods of releasing himself from the clutches of a drowning person the Schafer methods of resuscitation while for a proficiency certificate of the Society he must show that he can swim 100 yds on the breast and 50 yds on the back with the hands either clasped or folded in front of the body and can swim to a depth of not less than 5 ft from the surface and bring up an object of from 2–5 lb in weight that he can perform four methods of rescue and three of release in the water and also the Schafer method of resuscitation The life-saving certificate and the St John's Ambulance certificate for skill in rendering first aid to the wounded and if necessary, removing to a place of safety are also of great value as educational incentives A A M

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PHYSICAL EXERCISES IN EDUCATION, THE HISTORY OF.—In Ancient Greece, earlier education consisted in music and gymnastic (*i e* in due

provision for the exercise of mind and body) In ancient Rome and in all countries where the military side of life has been prominent there has always been full attention to the physical exercises preparative for war In the Middle Ages characterized by ascetic ideals schools under ecclesiastical direction did not include provision for physical training Chantry schools in the later Middle Ages though numerous were small in numbers and small schools have rarely been distinguished for physical exercises Chivalric education (*q v*) however in the houses of nobles and knights required physical training predominantly and had their *probitates* mainly for physical avocations as the ecclesiastical schools had their Seven Liberal Arts and the former included swimming archery boxing hunting The chivalric attention to physical exercises after the Renaissance became intensified by the appeal to Galen and the Greeks especially in the Italian Courts The physical training of the Courtier received its highest literary expression in Baldassare Castiglione's (*q v*) *Il Cortegiano* (1528) translated into English by Sir Thomas Hoby in 1561 The advocacy of physical training is to be found in English authors independently of Castiglione particularly in Elyot's (*q v*) *Gouvernour* (1531) and in Mulcaster's (*q v*) *Positions* (1581) Elyot quoted the Greek physician Galen and Mulcaster the Italian Hieronymus Mercurialis *de Arte Gymnastica* (1569) English writers (*e g* Elyot Ascham Mulcaster) particularly advocate archery (*q v*) the cultivation of which goes back at any rate to Norman times The Tudor writers bewail its decadence In Sir Humphrey Gilbert's proposed Academy (*c* 1572) teachers of physical exercises are for the first time suggested as staff members of a college viz "one master of defence and a dancing and vaulting teacher So with the academies projected by Kynaston Gerbier etc and in the scheme of John Milton physical exercises form a marked feature In 1538 or earlier Cardinal Pole had made further the first English suggestion of a public school for nobles—in which all the feats of war as well as virtue and learning should be prominent

Physical Exercises not Regarded as Preparation for War J L Vives in 1531 was the first to advocate physical exercises in schools without any view to preparation for war

Reading aloud and careful repeated pronunciation were regarded in Renaissance times as physical exercises as well as language methods The rule of Harrow School (1580) probably represents sixteenth century views of games in school life On Thursdays and occasionally at other times games were to be permitted Their play shall be to drive a top toss a hand ball to run or shoot—and none other In 1615 the Camberwell Grammar School Rules added to the Harrow 'play" also wrestling leaping and *chess* Playing fields at Eton were laid out in 1583–1584 The first recorded cricket match between public schools was in 1799 when Eton played Westminster in 1805 the first Eton and Harrow match took place Football is a very old game Rugby football as such however dates to 1823 The first football match of Rugby School with a "foreign' team was in 1867

Modern School Athleticism Modern public school athleticism dates its beginnings to the earliest part of the nineteenth century It received an impetus from Arnold at Rugby (1829–1842) since he left so much scope to the elder boys to organize school activities The competitive element has dominated the development of school physical exercises Athletic sports and gymnastic displays have become features of almost all public schools The concentrated attention of public school boys on athletics is criticized adversely by educationists on account of the crowding out of the full time that should be given to intellectual work and the consequent wrong perspective induced in the relative importance of physical and intellectual education But over emphasis on the athletic side by the public schools has at least secured in the national school system of the future that due attention will be paid to physical exercises They have made clear that the training which arises from free spontaneous action and organization by boys themselves has a specially moral as well as physical aspect which differentiates these exercises from the controlled and directed work of the gymnasium and that there is need for both F W

PHYSICAL LABORATORY METHODS —The boundary line between university and school teaching may be placed where specialization in any subject begins At school the course should be so arranged as to provide a broad basis of general knowledge while at the university specialization may by stages be carried out to such an extent that the student deals at last with one particular point in a research that may continue for months or years

A school laboratory course ought to begin with practical mechanics Even when theoretical mechanics is taught by a mathematician the practical work will be performed in a physical laboratory The apparatus should be as simple and direct as possible because the fundamental principles of mechanics are very difficult to grasp The timing of a ball rolling different distances down an inclined plane enables the facts of accelerated motion to be illustrated Mass and momentum are best elucidated by means of apparatus on the lines of Hicks's Ballistic Balance indeed an absolutely logical measurement of mass can be based upon *data* obtained with this apparatus The definition and illustration of force follows next However much we may use the effects of human exertion in qualitative exposition it cannot be too strongly emphasized that the sensation accompanying exertion is not even roughly proportional to the force exerted when this is measured dynamically

A number of **statical experiments** can be arranged with the help of pulleys and balanced rods to illustrate the laws of equilibrium and the principle of moments It is well to make acquaintance with the laws of friction of solids for if the presence of friction is not recognized Newton's first law appears to be wrong Simple observation misled early philosophers the modern pupil is equally puzzled by it Rotations and oscillations must be dealt with very lightly by means of wheels rotating about fixed axles and the simple pendulum Energy is difficult to illustrate experimentally indeed the notion of energy is superfluous from the point of view of elementary mechanics It is only when heat phenomena are measured that its utility arises

Hydrostatics affords scope for simple experiments The equality of action and reaction is well illustrated by showing that when a body is suspended in water its apparent loss of weight is equal to

the apparent increase in the weight of the vessel and water The elementary facts of surface tension (capillarity) are very simple and are invariably found to be interesting

If the resources of the school are small it is much better to be content with a course in mechanics than to strike off along the other branches of physics leaving mechanics alone There is a temptation to adopt the latter course because so many of the phenomena in electricity in particular are much more fascinating Only *formal* courses are here referred to it is not intended to exclude informal teaching of any branch whereby a pupil s interest may be stimulated By all means let him build up electric batteries electric bells telephones etc prior to any formal teaching on these subjects But it cripples both the pupil and the teacher if formal teaching on these matters is attempted before a sound introduction to mechanics has been given

A Junior College Course In a junior course at college it may still be necessary to begin at the beginning because so many of the students will be found to have no formal experience of experimental work Very simple apparatus will bring out fundamental principles There is a tendency to make the apparatus too complicated If simple apparatus is provided it will be possible to multiply it so that any group of students working in pairs will all be able to do the same experiment at the same time This system has two advantages It enormously simplifies the work of instruction and supervision and also it enables the practical work to proceed in the main *pari passu* with the lectures The only alternative system is to provide a group of experiments containing as many as there are pairs of students and then experiments are taken by the students in cyclical order The obvious disadvantage is that while some are working near the beginning of the subject others are working far past the point reached in the lectures In this case it is almost necessary to have written or printed instructions for circulation and obviously the work of supervision is more difficult In the former it is possible to write up a brief account of the experiment on a blackboard and to give a fifteen minutes explanatory account of it from the desk

Apparatus Different teachers have different opinions as to what apparatus should be devised to effect Some aim at making it so that the student may be able to obtain correct numerical results without any corrections being made from the simplest form of theoretical formula For example an Atwood s machine may be made with its pulley of very small moment of inertia so that the corresponding term may be omitted from the final expression Or again ball ended magnets are employed because they can be made so that the poles are nearly at the centres of the spheres Or again very long magnets are employed in order that one pole may be as remote from the deflected compass-needle as to have negligible influence While some advance towards simplification must always be made opinions differ in regard to the extent to which the process may judiciously be carried The student is apt to acquire a knowledge of the simple law without realizing (perhaps even without being told) the very special arrangement which was necessary to demonstrate it Having learned by using a long magnet with one pole placed successively at different small distances, that the law of action is that of the inverse square, he may fail to grasp under what very restricted circumstances this is approximately the case As soon as he is able to understand the underlying theory he should find for himself that the action of a magnet follows a more complicated law that the poles of an ordinary magnet are not at its ends, and that the properties of the pulley affect the acceleration produced in the case of an Atwood s machine The process of obtaining *data* from which the effect of the pulley can be algebraically either found or eliminated constitutes as a matter of fact an exceedingly good example of design in the treatment of disturbing causes So too the elimination of the effects of radiation and conduction in calorimetric experiments by arranging that they add up to zero on the whole is another example of scientific method The difference between this example and the first examples given lies in the fact that the student has to make the adjustment himself instead of it being made behind his back

An example of a bad attempt at elimination is provided in the usual experiment for determining the latent heat of steam when a trap is employed with the object of collecting the water formed by condensation in the delivery tube This trap lets the steam through surcharged with liquid and does indeed more harm than good The only successful way is to prevent the steam from becoming charged with liquid at the start This can be done by using a broad flat bottomed boiler heated by a ring burner a large surface for evaporation is thereby provided and sufficient steam can be formed without bubbling taking place The moisture in wet steam consists mainly of the broken walls of bubbles

Points of design of this kind may be quietly introduced in the first year the full study of them should be left for the senior courses

A Senior College Course In these senior courses the apparatus must be more elaborate and for that reason cannot be multiplied indefinitely Hence it will be impossible to keep alongside a course of lectures But the same necessity for parallelism between lectures and laboratory work does not exist provided that a student has been well grounded in the first year Much discussion has taken place as to the character of the instruction to be given in the senior years If we had only geniuses to deal with it would probably be best to turn them loose in the laboratory and give merely gentle guidance as occasion arose A much more original type of worker would be developed in this way But when the average student is left alone he merely wastes time Quite definite instructions must at first be given either by manuscript or printed sheets Manuscript instruction permits changes to be made from year to year printed sheets are apt to be unchanged until the stock runs out In either case individual oral teaching should also be given so as to develop the idiosyncrasies of the student Whenever the chance arises he should be induced to depart from the routine methods and do independent work The latter part of his pre graduation course may be devoted entirely to research suggested by his teacher This will tend to prepare him for his post-graduation course which so far as laboratory work is concerned will consist entirely of research

Of research we may say that it is beyond all rules and regulations A W P

PHYSICAL AND MENTAL EDUCATION, THE CO-ORDINATION OF.—(See CO-ORDINATION OF PHYSICAL AND MENTAL EDUCATION, THE)

PHYSICAL LABORATORY, THE.—(See LABORATORIES, THE EQUIPMENT AND ARRANGEMENT OF)

PHYSICAL THEORY AND HOW IT MAY BEST BE TAUGHT — In view of the importance for the teacher of physical theory of a realization of its aims and criteria and a knowledge of its *data* and methods these will be considered in order in so far as they afford a fitting basis for the consideration of mental equipment and teaching method and for the critical study of physical theory In a broad sense physical theory aims at constructing a system of mental images or symbols which shall represent the measurable changes perceived in external objects and their relations It seeks to formulate fully but concisely a set of concepts and laws to express the regularities existing for the images and their changes so that we may be able to determine their consequences and so foresee the corresponding consequences of external changes Such a well established system of concepts and laws competent to represent fully a group of natural phenomena their relations and sequences constitutes a physical theory

Criteria and Data. The criteria for judging a physical theory have been well stated by H Hertz The images of the theory its concepts and laws must be permissible (*i e* logically consistent with each other and with those of other accepted theories) They must be correct (*i e* the essential relations between them must conform to those between the external objects represented) They must be appropriate (*i e* they must be distinct—include the representation of the greatest possible number of essential external relations and simple—exclude the representation of the greatest possible number of unessential external relations) The theory itself the exposition of these images and their relations must show clearly what is assumed on account of permissibility correctness and appropriateness respectively so that we may know how to modify it if necessary Whether an image be permissible or not can be decided without ambiguity once for all for the necessary qualities depend upon the laws of thought alone Whether it be correct or not can also be decided without ambiguity but only as regards past experience and subject to modification in the future Whether it be appropriate or not is a matter of opinion the most appropriate must be selected from many well tried images In order that a theory may fulfil its chief aim of enabling us to foresee future events, one thing above all is indispensable the logically necessary consequents of its images must themselves be the images of the naturally necessary consequents of the external objects and relations represented

Observation and experiment enable us to detect the conditions under which a certain change in nature is followed by a second but they cannot yield perfectly determinate results unless both changes—their relations and the attendant circumstances—can be determined quantitatively (*i e* are amenable to measurement) The measurements may be effected in terms of spatial and temporal determinations either directly for motions (*e g* strain accompanying loading), or indirectly by means of special apparatus for qualitative changes (*e g* temperature changes by means of the thermometer) The first change and any attendant circumstances are varied suitably, and the consequent change measured thus essentially independent sets of corresponding numerical values are obtained and tabulated subject to accidental errors remaining after the elimination of known errors and due partly to imperfections of apparatus partly to peculiarities of the observer In virtue of the hypothesis stated or implied of the uniformity and continuity of nature we can represent the tabulated numerical results approximately by points lying on a series of continuous curves Each curve exhibits the relation between the changes under otherwise constant conditions for *all* values and free from accidental errors and the mean deviation of the experimental points from the curves affords an estimate of the magnitude of the mean accidental error Either the curves or the tables may be used for testing a mathematical formula proposed for representing the relation between the changes and either following from a known theory or expressing a new hypothesis or empirical law If the formula can be adjusted to fit the curves or tables within the limits of the mean accidental error and shows no systematic deviation from them it may be regarded as correct within those limits Such curves and formulae constitute the *data* of physical theory

Teacher's Equipment and Method Physical theory provides the concepts and laws needed for the complete representation of observations and experiments and the explanation of the empirical laws derived from them The process is tentative the definitions of the concepts and the statements of the laws are formulated provisionally in the first instance to represent incomplete experience and must be amended continually to ensure their permissibility and correctness with respect to later theoretical and experimental developments The stage of formulation involves inferences from particular observational facts to general hypothetical propositions (*i e* it is inductive) The stage of verification necessitates the calculation and experimental proof of the consequences of the hypotheses (*i e* it is deductive) Mathematical and experimental methods are equally necessary

The teacher of physical theory should have some knowledge of logic particularly inductive logic and methodology with special reference to mathematics mechanics and physics He must know experimental physics thoroughly not merely be acquainted with the *data* of physical theory but also be able to estimate their accuracy as well as the reliability of the experimental methods used in obtaining them He must have a working knowledge of mathematics particularly of the calculus and analysis generally He must know the subject-matter of physical theory in sufficient detail to enable him to give an account of the principal accepted theories and widely enough to afford a basis for a critical and historical survey of their relations to each other and to superseded theories In particular he must know mechanics and thermodynamics thoroughly on account of their fundamental importance for other branches of physics and should have some acquaintance with statistical methods as applied to the kinetic theory of gases in view of their increasing use in modern theory (*e g* the theory of radiation)

The teacher should bear in mind the special logical character of physical theory in that it uses

induction and mathematical deduction but hardly any classification The theoretical teaching should go hand in hand with experimental work but at the same time mathematical methods should be practised freely Exercises should be chosen for their physical interest and not primarily as mathematical problems, if they have applications to common life so much the better Special attention should be paid to arithmetical work which is often neglected and to graphical methods on account of their educational value as well as their technical importance Mere memory work is out of place definitions of concepts and statements of laws should not be learnt by heart without a thorough understanding of their meaning the pupil does not really know them until he can apply them to particular cases and obtain numerical results At the earlier stages when the pupils' logical faculties are undeveloped and their mathematical equipment is very slender the theory should be secondary to the experimental work and should consist largely of the study of fundamental concepts and the simplest empirical laws (*e g* velocity mass as a measure of the amount of matter force measured statically as an effort laws of falling bodies and of the pendulum laws of simple machines etc) together with simple arithmetical and graphical exercises Even here attention might be directed to the presence of experimental errors and to the importance of the repetition of observations both for the elimination of accidental errors and the multiplication of particular instances As the pupils logical faculties develop and their mathematical equipment improves increasing stress may be laid on theory the meaning of concepts may be deepened and empirical laws generalized and explained in terms of ultimate laws The exercises may become more and more mathematical but the importance of numerical applications to concrete problems should never be lost sight of

The Electron Theory as an Example of Physical Theory This theory is based upon the concept of the electron—defined as a definite negative electric charge co-existing with a definite though variable mass—and upon three laws one expressing the relation between the mass of the electron and its speed another determining the electro magnetic field due to it and a third determining the mechanical action of the external electro magnetic field upon it

The idea of a unitary constitution of electricity is suggested by the phenomena of electric conduction in liquids and gases which are explained by the motion of ions (*i e* of material atoms carrying integral multiples of an invariable unit electric charge) Whilst positive charges never occur apart from material atoms negative ones are found in rarefied gases and in the radiation from radio-active bodies associated with masses much less than that of the lightest atom and moving at speeds comparable with that of light These masses vary with the speed and are represented with an error of a few per mille by the formula $m/\sqrt{(1-\beta^2)}$, where β denotes the ratio of the speed to that of light and m the resting mass (equal to $\frac{1}{1850}$ of the mass of the hydrogen atom) These results necessitate the formulation of a new concept that of the electron and of the mass formula just given The electron like every other electric charge generates an electro-magnetic field, and is acted on by an external electro-magnetic field, these effects being represented by mathematical formulae, framed (by analogy) after the model of those which are derived from the accepted electro-magnetic theory of Maxwell for use with ordinary electric charges From their very origin, these formulae represent permissible laws The correctness of the electron theory has been verified abundantly by recent experience the permissibility of the concept of the electron and of its mass formula alone remain to be discussed

Maxwell s electro-magnetic theory assigns a definite mass of purely electro magnetic origin to the electron but only on the assumption of a definite size and structure as the size diminishes to zero the mass increases without limit But the parts implied by a definite size and structure necessarily repel one another and therefore necessitate other forces than the electro-magnetic ones to preserve the existence of the electron These non electro magnetic forces and their structure can be so assigned as to lead necessarily to the given mass-formula *e g* an invariable uniform normal pressure on the surface suffices for a deformable electron in uniform rectilinear motion for the electron contracts automatically in the direction of motion in the ratio $1:\sqrt{(1-\beta^2)}$ whilst its mass increases in the inverse ratio Unfortunately this simple force system fails to secure stability and so requires additional tangential forces or their equivalent which would alter the mass-formula though possibly not seriously However that may be this attempt to secure permissibility and correctness causes a loss of distinctness and appropriateness in so far as the concept of the electron does not include the essential relations implied by the non electro-magnetic forces Alternatively we may start from the principle of relativity which postulates our complete inability to determine absolute motion by mechanical optical or electrical means This principle is consistent with Maxwell s electro-magnetic theory and necessitates invariable pressure so that it is permissible It is correct giving the proper contraction and increase of mass for an electron which moves relatively to the observer (though an observer moving with the electron could detect neither) But it is not appropriate, for it cannot by itself explain either the co-existence of charge and mass or the existence of the electron in spite of the repulsions between its parts The concept of the electron must be postulated independently On either alternative the electron theory leaves something to be desired from the logical standpoint but its defects in this respect are really no greater than those of the much more developed theory of mechanics in which the concept of force especially involves logical difficulties nor do they militate seriously against its success in representing recent experience and in predicting new facts G A S

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PHYSICAL TRAINING, ENGLISH SYSTEM — (See CALISTHENICS AND THE PHYSICAL TRAINING OF GIRLS)

PHYSICAL TRAINING OF GIRLS, THE —The tendency of girls and women to be employed in sedentary occupations and the constant enforced adoption of attitudes often cramped and confined make it in the highest degree important that during growth their frames should be properly developed and a taste inculcated for the open air and games

The annual report of the Board of Education points out that medical inspection and treatment the provision of meals school hygiene and open air and other special schools have all contributed to reduce the amount of suffering and ill health amongst children It is not enough to improve and restore the health of sick and ailing children— active measures must also be taken to promote the physical efficiency of all children

Exercises which should produce a good carriage and dancing which should be an elegant accomplishment have always been part of the education of a young lady but only during recent years when the sphere of woman s work and her outlook on life have been widened has physical training begun to receive proper attention This has been obtained by the recognition that the due proportional development of all of which a girl is capable can be produced only by a healthy body and by her participation in games and outdoor life destroying prejudices as to what were suitable exercises for women Perhaps also the knowledge of physiology and anatomy gained by women who were anxious to develop women s powers has helped to overthrow foolish prejudices as to the harm done to women s organs by various forms of exercise moreover it is now recognized that the discipline of games and formal exercises develops character and self control and thus regulates nervous expenditure and militates against the tendency of women to be swayed by feeling alone

The objects of physical training are (1) To develop all parts of the body harmoniously (2) to correct defects incipient or established (3) to cultivate grace of movement (4) to provide recreation in the intervals of mental effort (5) to develop character In this country physical training is obtained (1) by organized games (2) by gymnastic teaching or formal physical training exercises (3) by various associations clubs etc such as the Girl Guides which induce girls to indulge in healthy occupations and to continue their gymnastics and games after leaving school

Conditions Before, During, and After Physical Exercise Physical training is only of full value after due attention has been paid to the general hygienic conditions of the girl s life It should be undertaken in co operation with a system of medical inspection which will give advice on personal hygiene Girls suffering from marked anaemia or heart trouble may be deleteriously affected, either temporarily or permanently by unwise exercises On the other hand they may be helped by suitable exercises graduated to their ability and become capable of undertaking normal school drill Indeed it is better that such girls should undergo some course of physical exercise as in that case they will bear the strain of ordinary life better Physical training is to increase efficiency—surroundings and conditions must therefore first be regulated A sufficiency of good air playing fields and playgrounds and a large well ventilated room where formal exercises can be performed are an absolute necessity to every school The costume should be simple and neat

After games facilities for changing all garments down to the skin and if possible baths should be provided Excretions should be removed from the skin as soon as possible and the skin stimulated by cold douching after the warm bath has cleansed it The more informal the exercises the more natural good will be obtained Running jumping, skipping walking riding—all are excellent forms of exercise Swimming brings into play all the muscles of the body under perfectly natural conditions Tennis hockey basket ball and fives are all games which cultivate precision of eye and co ordination of movement Games played in conjunction with others require more caution than games or natural exercise undertaken by the individual as the personal inclination to stop when the individual has had sufficient has to be subordinated to the capacity and eagerness of the others Therefore such games should be under supervision Particularly is this true of hockey (*q v*) which may be very strenuous lasting too long for the younger girls Net ball (*q v*) is an excellent game for girls as it provides arm movements combined with running The upright attitude is better than that the hockey player adopts and the game is less dangerous than lacrosse

Formal Exercises But however freely games are indulged in it is important to have some scheme of formal training particularly in the case of schools in towns where it may be difficult to provide playing fields in the vicinity In the kindergarten the exercises will be mainly recreative as a relief from formal lessons Simple games and dances with few limb movements are all that is required For older children exercises for both recreation (*i e* movements to promote circulation remove fatigue products and rest the cerebral cells) and muscular cultivation are needed The latter must be done systematically and with intelligence by both teacher and taught It should call for mental as well as muscular effort and it should not be considered as recreation by the compiler of the time table but as a piece of hard work

Such exercises should be conducted only by a mistress specially trained for the work She should have a sound knowledge of anatomy and physiology in order that she may choose proper tables of work for her pupils and be able to see that none of them are becoming exhausted Such a teacher will be on her guard observing any sign of overstrain undue flushing or pallor breathlessness or sign of effort

The Training of Teachers Since 1909 physical training has been a compulsory subject in all the training colleges In addition during 1914–15 about 200 classes in physical exercises were held by forty three authorities for teachers who had not taken physical exercises at a training college or who desired to refresh their knowledge of the subject Further vacation courses of intensive training have been arranged by other authorities so that in large elementary schools it may often be possible for the drill to be taken by a teacher with some special knowledge of the subject The Board of Education are so impressed by the value of this work that they are offering maintenance scholarships to teachers who attend two four-week courses

at Reading or Barry Thus it will shortly be possible, even in elementary schools for the mistresses conducting drill classes to have some knowledge both of the method of teaching drill and also of the *rationale* of the exercises and the dangers against which they must guard At present however this is not by any means universally the case The appointment therefore of an expert instructor in the different districts to guide and help the class teacher in her work is desirable

Such organizers of physical education have been appointed in about one fifth of the education areas

There is no doubt that for general use the Swedish system of physical exercises is the best to form the basis of any syllabus All the movements are devised on strict anatomical and physiological lines The Board of Education made the syllabus of physical exercises they drew up in 1909 for use in public elementary schools definitely Swedish in character In this due attention is paid to the respiratory and circulation systems The exercises are progressive and every movement must be produced in response to a definite will impulse In exercises which are for training rather than for recreation the help of music is to be deprecated Music gives a rhythmic stimulus which produces a reflex action rather than an action under control of the will therefore the exercise becomes mechanical and part of the educational value of the lesson as training in voluntary control of muscular action and muscular sense is lost

The Value of Music But the value of music in physical training must not be overlooked In recreational drill (*i e* drill which is for the purpose of relaxing muscles tired with constrained positions in school or to improve the circulation and deepen respiration after close application to work) the less mental effort there is the better In such cases music acts as a stimulant and refreshment is gained with the minimum amount of effort Further music has an aesthetic value which is of very great importance Music on most minds produces a grace and ease of movement which act as a corrective to the rigid exactness of the formal lesson Thus music may with advantage be used in all the recreational periods It should never be used as an adjunct to exercises that are being learned but it may be used when they are learned in order to reduce fatigue and foster grace of action

Time and Duration of Lessons The children of every school should take some physical exercise each day They are then kept in training and there is less likelihood of them getting tired and unduly excited by the drill lesson The time table ought to have a period each day for recreational free standing or apparatus work Unfortunately the curriculum of many schools does not allow this and especially with the secondary school girl doing advanced work the time devoted to physical training is often limited and badly arranged Twenty minutes each day seems a large amount out of the crowded time table of a fifth or sixth form girl but she is often the girl who needs it most as preparatory work takes up so much of her leisure time that she may not get enough exercise out of school But if that cannot be arranged the time devoted to gymnasium games and drill ought to be spread over the week and not crowded into one day leaving nothing for the remainder of the week From such inequalities spring the disasters that are sometimes unfairly laid at the door of gymnastics

The educational drill lesson, whether it occurs once or twice in the week should be at an hour when the pupil is fresh on other days a more recreational class consisting largely of dancing and march movements may be placed later on in the school morning, and thus keep the muscles in training whilst at the same time affording rest and relief from hard mental work

Special Considerations One other condition of the physical training of girls must be considered How far is their training affected by the development of adolescence and the period time? In a school where the exercises are carefully graded to the physique of the girls in the class there ought to be no interruption in the regular training by the normal girl This implies careful supervision by mother house mistress or gymnastic mistress and by medical officer A girl who shows any tendency to strain pain or profuseness at the period time ought to be individually treated Such girls ought either to have drill stopped for a time or forbidden during certain times in the month At the same time their general health should be attended to and complete rest periodically arranged Where the girls are anaemic irregular but not profuse or suffering from heart weakness special exercises should be arranged Again where there is commencing spinal curvature the cause should be sought and suitable corrective exercises arranged Further restrictions come rather under the heading of remedial exercises than that of physical training No more definite rules can be given Only the trained teacher and the medical officer can judge of the powers of each class in each school C C

PHYSICAL TRAINING, GERMAN SYSTEM OF —(See CALISTHENICS AND THE PHYSICAL TRAINING OF GIRLS)

PHYSICAL TRAINING (SCOTLAND), ROYAL COMMISSION ON —The Report [Cd 1507] and evidence [Cd 1508] may be regarded as the charter of modern physical education throughout Britain The inquiry coming at the psychological moment, 1902 gave practical expression to the lessons of the South African War It covers all existing educational institutions and agencies—public and voluntary—from the elementary school up to the university it deals with teachers no less than with pupils and it lays down the lines of reform alike in the school and in collateral spheres Effect has been given to most of its recommendations by the Education (Scotland) Acts 1908 and 1918 and supplementary enactments The most important sections are those dealing with medical inspection the training of teachers and continuation classes A national system of physical training contemplated by the Commission was later on dropped in favour of the Swedish system This portion of the subject was dealt with in detail by the Interdepartmental Committee (1904) J CLARKE

PHYSICALLY AND MENTALLY DEFECTIVE CHILDREN, THE EDUCATION OF —There are so few outstanding names either of persons or of places in the short history of educational provision for either physically or mentally defective children, that it is difficult to do more than describe the increase in the quantity of such provision The quality of the provision has not improved as rapidly as the quantity has increased but there has been an improvement approximately parallel to that

achieved during the last 120 years in public health generally Even at the present time in those places where special schools or classes are not established by law and where the pupils are not compelled to attend, the age long neglect of the mentally defective children continues and physically defective children receive no systematic training at home

The education, as distinct from the medical treatment of physically defective children dates from 1832 when a residential school was established in Munich by a citizen named Kurz Various private residential schools were established in different countries throughout the world during the nineteenth century The first day school for physically defectives in England was established by the London County Council in 1899 The name of Mrs Humphry Ward is honoured by reason of her enthusiastic and successful efforts to secure the establishment of theses schools in London

Mentally defective children were apparently thought to be incapable of being educated until a French physician Itard (*q v*) in the first five years of the nineteenth century conducted his famous experiment on the Savage of Aveyron In 1828 a residential school for feeble minded children was established at Salzburg and in 1837 the classic of the education of the mentally defective was published by the French Dr Séguin (*q v*) *Idiocy and Its Treatment by the Physiological Method* is the basis of all the work which has been done in this type of special education since its publication

At the present time almost every civilized State makes provision either by means of special classes or better by means of special schools for the education of physically and mentally defective children No country is more advanced than England in this beneficent work

Mentally Defective Children The Royal Commission on the care of the Feeble Minded issued its Report in 1908 Legislation followed in the Mental Deficiency Acts of 1913 and 1914 The Acts define four groups of defectives viz —

'(*a*) Idiots that is to say persons so deeply defective in mind from birth or from an early age as to be unable to guard themselves against common physical dangers

(*b*) Imbeciles that is to say persons in whose case there exists from birth or from an early age mental defectiveness not amounting to idiocy yet so pronounced that they are incapable of managing themselves or their affairs, or in the case of children of being taught to do so

'(*c*) Feeble minded persons that is to say persons in whose case there exists from birth or from an early age mental defectiveness not amounting to imbecility but so pronounced that they require care supervision and control for their own protection or for the protection of others or in the case of children that they by reason of such defectiveness appear to be permanently incapable of receiving proper benefit from the instruction in ordinary schools

'(*d*) Moral imbeciles that is to say persons who from an early age display some permanent mental defect coupled with strong vicious or criminal propensities on which punishment has had little or no deterrent effect'

These Acts make it the duty of every local education authority in England and Wales to provide for mentally defective children of the third and fourth groups between the ages of 7 and 16 and for the after-care of such children

It is the duty of the school medical officer to make a thorough investigation of each case, both by clinical methods and otherwise, so as to ensure that only those children are sent to a special school who are incapable of profiting by a normal education but who are capable of profiting by the special education provided

Before proceeding to discuss the school training of mentally defective children we have to notice that the work of the special schools for mentally defective children is considerably affected by the amount of other special school provision For example if the local education authority provides special schools for blind deaf partially blind partially deaf and physically defective children and also an open air school it is possible to send to the mentally defective school only those pupils who are undoubtedly mentally deficient The open air school (*q v*) can be used as a place where doubtful cases are kept under observation The practical effect of this on the curriculum and methods of the mentally defective school is very important no attempt need be made to approximate in either curriculum or method to an ordinary elementary school because practically no curable children will be under treatment and it is only for the sake of the curable children who might possibly return to an ordinary school that any such approximation is needed

The aims of a school for mentally defective children will naturally differ considerably from the aims of an ordinary school It has not yet been decided for practical purposes whether the school should aim at enabling the mentally deficient child to conceal his or her defects If the question is answered affirmatively speech training will receive much more emphasis than if the answer is negative Experience shows that time spent in training mentally defective children to read write and calculate is time educationally wasted Yet under the conditions of modern life persons who cannot read write or count readily are at a serious disadvantage Experience shows on the other hand that mentally defective children are good manual workers that they are capable of improving considerably in any form of manual training which does not demand initiative Work in wood or plastic material gardening poultry keeping bee keeping are all within the compass of the attainment of the boys and gardening some forms of needlework and some form of domestic occupation can be usefully undertaken by the girls Boys and girls alike work only under supervision and constant direction but given these they work well

On this experience the curriculum of a school for mental defectives is based Some speech training is given some attempt is made to teach the pupils to read write and do simple sums a little music is included though a large proportion of the pupils find no enjoyment in this direction, and the bulk of the time is given to various forms of physical activity including physical training and manual occupations As an example of the ability of mentally defective boys to work under supervision, it may be mentioned that the boys attending the Margaret McMillan School in Bradford in 1915 built under the direction of the teaching staff five classrooms and a dining room

Residential Schools. Recent experience shows that the education of mentally defective boys is

more effective if they are resident in the school than if they merely attend for five days of about six hours each If residential schools for girls can be established the domestic training of the girls will certainly become more practical, and more permanent educational effects will be produced The number of residential schools for mentally defective children is small at present but a rapid increase in the near future may be confidently expected Whether the school is a day school or residential it is desirable to have plenty of ground so that the pupils may enjoy as much sunshine and fresh air as possible and that gardening may be included in the curriculum The value of space is even greater for these than for normal children

Physically Defective Children In selecting pupils for admission to schools for physically defective children where medical treatment is given in addition to education the same care is needed as in the other special schools The slighter defects can be treated in the open air school the more serious cases being reserved for the physically defective school This secures for the physically defective school the same independence of the ordinary schools as exists in that for genuine mental defectives Open air school buildings with suitable accommodation for feeding the children and with special rooms for remedial exercises and other medical treatment are required Space for gardening is a necessity

The curriculum in a school for physical defectives is very similar to that of an ordinary school except that the rate of work is less on account of the smaller amount of energy the pupils possess and the more frequent interruptions in school attendance due to illness The dominant aim of the work on the intellectual and occupational side is to enable the pupil to occupy himself or herself happily and profitably Present interest is more important than a possible future value This means that the methods of teaching and the sympathy and enthusiasm of the teacher must be even more inspiring than with normal children Physically defective children need supervision for their physical welfare not primarily to keep them at work they can and do learn to occupy themselves Stress is laid on occupations such as reading music various forms of handwork and gardening which are immediately enjoyable

Qualifications of Teachers In each type of special school that we are considering the teacher needs a high degree of skill in dealing with children Sympathy patience insight and vitality are essential Skill in handwork is necessary in both cases and in the school for physical defectives it is desirable that the teacher shall be enthusiastic about at least one branch of learning (*e g* literature music plant and animal life) Power to deal with children individually to interpret rapidly and accurately their physical and mental needs is another important qualification of a teacher in a special school

Cost and Value The classes must necessarily be smaller in a special school than in an ordinary school Probably a class of twenty is as large as can be profitably supervised by one teacher and even then the cost of teaching mentally and physically defective children is very great as compared with the cost of teaching a normal child In 1913 the last year when it was possible to give current average costs the average cost of maintenance in Bradford per child was about £5 for normal children and about £17 10s for defectives If we could reasonably hope that as regards the mentally defective children this additional expenditure meant less future expenditure on criminals, and, as regards the physical defectives less future expenditure on public health, we could regard it comfortably as a profitable investment

The special schools serve three purposes They give the pupils a happier childhood than they could have either at home or in an ordinary school They relieve the ordinary school teachers of an immense strain and enable the ordinary school to do better work for the pupils who attend them The depressing influence of mentally defective children upon normal children is serious This is why special schools are better than special classes in ordinary schools By bringing children individually before the attention of specially selected teachers the latter are enabled to discharge a function in the wide field of educational experiment, which may well prove to be a by product more valuable than either of the two products definitely sought It is perhaps sufficient to refer to the inspiration which Madame Montessori derived from Séguin's book to indicate the possibilities of this aspect of special school work

After-care Most of the vexed social questions connected with the education of mentally defective children are included in "after care" A certain proportion of the boys and a smaller proportion of the girls have proved capable of earning a livelihood With the more accurate selection of genuine cases for admission to special schools this proportion will probably decrease The important fact is that mentally defective persons tend to reproduce their kind In all countries the mentally defective children are except for a quite small percentage, the children of mentally defective parents By the Mental Deficiency Acts of 1913 and 1914 these defectives on leaving school are placed under guardianship or sent to an institution until reaching the age of 21 years Each case is re considered at this age and guardianship or detention may if it is thought advisable be continued Heavy penalties can be inflicted on the guardian if the conditions of living are dangerous to the physical mental or moral welfare of the defective

Physically defective persons on the other hand, do not as a class come under the special protection of the law after they leave school As yet we have no definite information to show how these persons profit by their education, either in the wide sense or from the point of view of earning a living One may hazard the opinion that where parents need advice or assistance there are sufficient voluntary workers to give what is required

W T P

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PHYSIOGRAPHY.—This deals with phenomena which may be world wide in distribution, or confined to particular areas It is therefore impossible to treat it entirely upon a local footing or to find illustrations always at hand yet it should be

studied, whenever possible, in the open air Perhaps the most logical method is to deal first with the atmosphere next with the sea and finally with the land

Atmosphere Every school should possess a rain gauge and meteorological screen, with barometer, maximum and minimum thermometer, and hygrometer, to be read daily by the pupils in rotation the readings being checked by a supervisor who explains the principles governing the action of the instruments

As regards the world in general the relations between high and low pressure areas and prevalent winds and the migrations of the pressure and wind belts with the apparent movements of the sun must be clearly explained the formation of cloud and precipitation of rain illustrated by simple experiments the rainfall of the world studied in relation to the great wind systems temperature belts and the distribution of land and water, and rain shadows and their origin understood

More particularly the climate of one s own locality and country must be analysed In normal times, the charts issued daily by the Meterological Office, showing barometric pressure direction of wind, state of sky and sea etc can be obtained and should be expounded week by week Local phenomena such as cyclones and sea and land breezes ought to receive attention The clouds should be compared with cloud photographs and properly classified Any supposed facts regarding changes in the weather (*e g* in connection with moon or tides) should be tested by observation and adjudged to be fact fancy or coincidence A scientific attitude will thus be cultivated

The Sea If the school is inland a well selected series of photographs and diagrams serves to explain the action of the sea on the land and the formation of waves and breakers The tides especially those of the narrow and shallow seas the ocean currents and their relations to the wind-systems and the continents and the influence of these upon climate should receive attention Maps must be consulted and also constructed

The Land This part of the subject can best be taught in the field supplemented of course by indoor work yet it is more often than not taught entirely from text books

Geological maps with explanatory memoirs of nearly every part of the country are now available for the teacher who may study them at his leisure but it must not be imagined that the map will be easily read or the memoir easily understood unless the reader is acquainted with the principles and facts of geology which deals with world history and the geographies of the past as well as of the present

To give an example in illustration of this contention Many people are aware that in parts of the British Isles the rocks comprise some that are of volcanic origin When, therefore they see a mountain resembling a volcanic cone which may or may not, have volcanic material in its frame work if that mountain has a deep hollow (cwm or coombe) cut in its flank, they conclude that it must necessarily be a volcano, and that the hollow must be its crater Even slight acquaintance with the principles of geology should ensure a more cautious diagnosis yet this mistake has been made even by professed mining engineers It is useless to expect pupils to understand certain aspects of physiography whilst their teachers are often so woefully ignorant of the underlying principles They may know what a volcano is, but few realize *what* is a volcano and to what varied scenery an old volcanic cone fringed by marine sediments, and afterwards uplifted and dissected by denudation, can give rise

It is quite unnecessary to teach pure geology to beginners yet they should realize the meaning of a geological section Striking natural features and phenomena such as the Giant's Causeway or Niagara Falls may be offered as illustrations of occurrences that are or have been world wide in their distribution

The production of a watershed and the formation of simple river systems should be explained with the aid of models cut to shape or better still by modelling in Plasticine or other suitable medium before the students' eyes To explain rock sculpture and the varied types of scenic form derived from rocks of different hardness sheet upon sheet of Plasticine of different colours might be made to represent the different strata of sedimentary rock The teacher might then carve from the mass mountain valley and plain—giving to two sheets a special value as representing respectively a tough, resistant and a soft yielding bed of rock Some what similar experiments may be devised to explain the formation of mountains

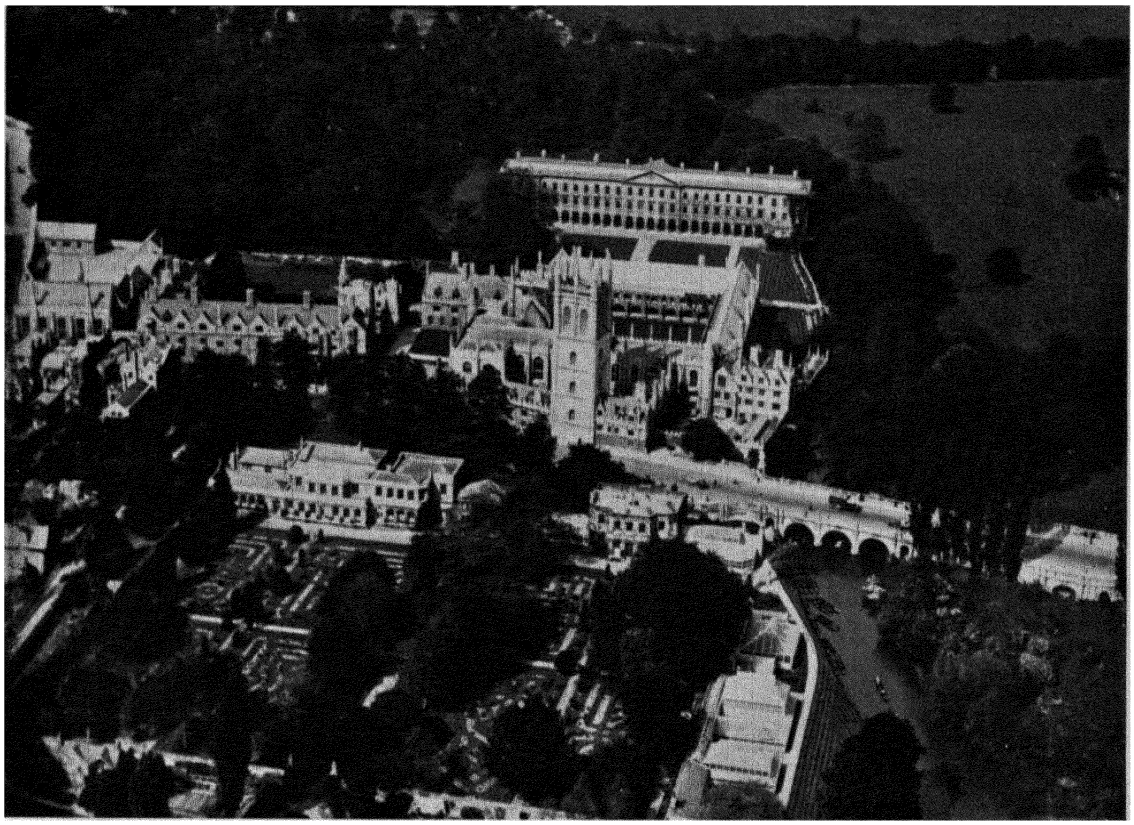
In the field it should be shown how atmospheric and weathering processes go hand in hand the way in which the solid rock is broken up at the surface and the effects of jointing stratification and cleavage The pupils should be taken to see the results of hill-creep—the accumulation of rain wash and scree material In time of flood the enormous power of the turbid water let loose how after the flood subsides the banks are found to have been destroyed, the course of the river altered and a deposit of alluvium left on the flood plain—should all be pointed out In the hill countries the change of vegetation with the elevation would be noted always with an eye to aspect and the geological nature of the subsoil rock If there are no lakes near a dammed-up reservoir will serve to represent a barrier lake and a pond will represent a rock basin

Indoors helps to teaching are supplied by diagrams pictures photographs models and contour maps whenever possible local as well as world famous examples being employed as illustrations The nature and use of fossils should be explained and an attempt made to give a clear conception of the true answer to the oft repeated question 'Was the sea really here at one time?'

B SMITH

PHYSIOLOGICAL ASPECTS OF CHILD PSYCHOLOGY—"The race marches forward on the feet of little children and each child in its development tends to recapitulate the history of the race Growth is the conspicuous characteristic of childhood The main purpose of education is to secure the most abundant and effective equipment for the service of life A study of the race and an understanding of the evolution of the individual afford the surest basis for the culture of the child

The physiology of childhood reveals the nature and purposes of vital forces governing bodily development the psychology of childhood provides a scientific account of mental processes in the unfolding life and the pathology of childhood indicates the character, causation, and consequences



Oxford Magdalen College, Bridge and Meadows *Photo by Aerofilms Ltd*

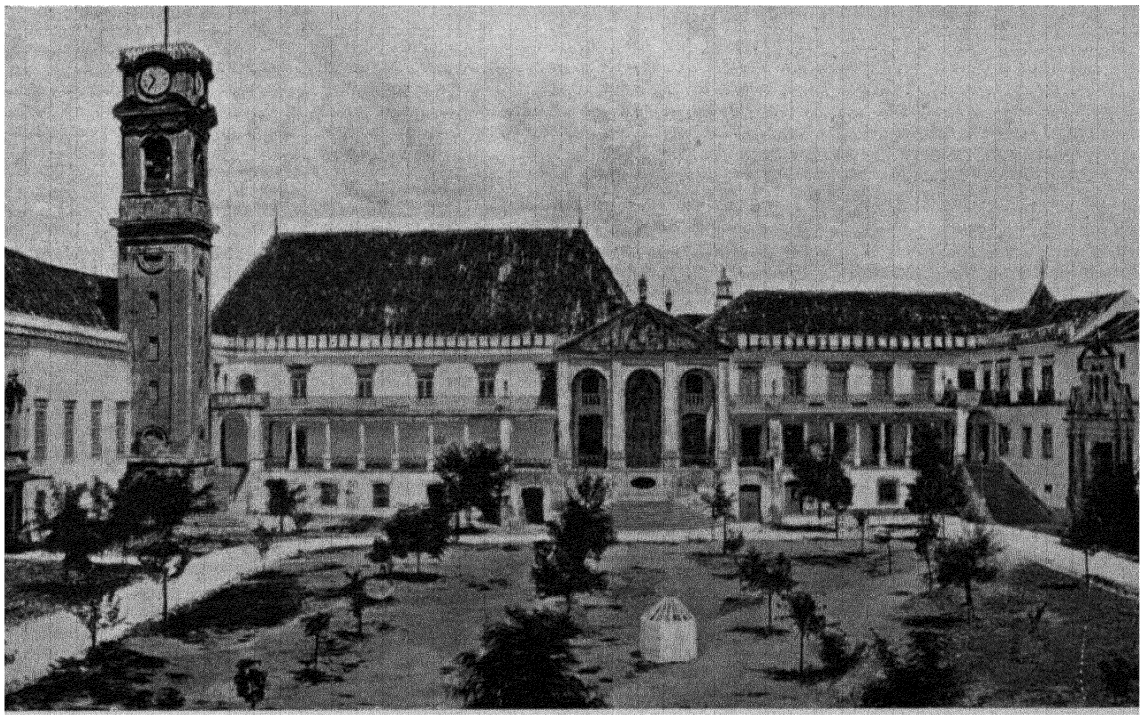


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PLATE LXXII

of innate and acquired defects disorders and diseases

The study of childhood demands a scientific spirit, a comprehensive outlook and boundless sympathy with individual needs Child study is the most highly elaborated department of biology and in its numerous branches touches practically all sections of human interests

The individual child climbs up its own genealogical tree hence in the revelations of heredity are afforded helpful records for the ordering of life's day And each child is but one link in the living human chain and therefore must be viewed and dealt with as a determining factor in eugenics

In the investigation of childhood and in the care and control of the developing child the wise teacher must ever remember the paramount importance of looking before and after while giving of the best in the preparation for the duties and discipline of the present

The child in all its stages of development must be considered and dealt with as a whole For purposes of convenience we divide but such division is detrimental unless it enables us to approach more nearly to an effective development and control of the unity of body mind and spirit For the purposes of the present section we are compelled to confine attention to what may be most conveniently designated physiological aspects

Stages and Ages Birth is a mere incident in the development of the child it marks a change of environment and the establishment of important bodily readjustments and new physiological activities The act of birth divides pre natal life from post natal life

The periods of childhood can be conveniently divided into (1) infancy extending from birth to the end of the first year (2) early childhood up to the seventh year (3) childhood from the seventh year to puberty and (4) the period of adolescence These are more or less arbitrary divisions Some have advocated a more physiological grouping such as (1) the period of maternal nursing or the age of suckling (2) from the appearance of the first teeth to the completion of the temporary set (3) from the appearance of the first permanent teeth to the onset of puberty

An attempt has been made to divide development into periods according to the various stages in the ossification of the bones as can now be conveniently ascertained by X ray examination Some find it convenient to divide adolescence into early youth and late adolescence Full maturity in bodily development and physiological powers are often not reached until considerably after the legal " coming of age ' some say 25 years or even later

For the purposes of psychological studies of childhood it is convenient to recognize in each child the following periods the *chronological* age is that determined in years months and days dating from birth the *physiological* age is indicated by ascertained standards of physical growth as regards height weight and the like indications of degrees of bodily development the *mental* or *psychological* age significant of intellectual ability capacity and progress the *pedagogical* age, or school standing denoted by the relative position in educational group grading and the *moral* or *religious* age

During recent years many observations and numerous experiments have been carried out in order to discover accurate means for the discrimination differentiation and classification of children and the regulation of educational work in relation to psycho-physiological development Various forms of intelligence tests are now available

Standards of Growth In studying the upspringing of the body and providing for the blossoming of mental powers it is essential to secure some convenient and readily applied standards of growth, In such examinations as can be carried out in schools under our system of medical inspection, some few easily determined points provide data which serve as useful guides *Weight* affords a particularly valuable index as to the health and proper development of a child From the end of the second year to the age of 7 years a child should gain about 4 lb a year and from the seventh to the thirteenth year 6 lb should be added annually As to increase in *height* this is most rapid during the first five years of life At the conclusion of the first year a child should be 27 in and 3½ in should be gained every year up to 5 years and then 2 in annually up to 15 years Much useful information is obtained from an examination of the number and character of the teeth the size and shape of the head the development of the chest the state of the muscles and the configuration of the limbs The influence of racial sexual seasonal and other modifying agents must be remembered Periodical variations occur in the growth of all children Boys of from 5 to 10 years develop more rapidly than girls girls of from 10 to 15 grow quicker than boys Girls at from 11½ to 14½ years are taller and from 12½ to 15½ are heavier than boys From 15 to 20 boys develop more speedily than girls, and continue to progress longer than is usually the case with girls Growth is generally most marked in the spring and least during the winter As is well known residence abroad in such a country as India frequently proves detrimental to the fullest development of a British child

The Physiology of Childhood The general well-being of a child his intellectual powers moral forces and spiritual aptitudes are all dependent in great measure on the effectiveness or otherwise of physiological processes To play aright the part of a parent or rise to the responsibilities of the teacher, or render effective leadership of adolescents a working knowledge of the psycho physiology of childhood is essential Pedagogical and ethical instruction provision for recreation and guidance in vocational and civic training must recognize the importance of a foundation in the principles of child physiology and child psychology Many text books dealing with these subjects are now available, and it will only be necessary here to refer to certain general points Throughout the periods of development the human machine is characterized by activity growth is at its maximum Nutritional processes require constant consideration Much sleep and proper periods of rest are essential for recuperation It is necessary that hygienic habits control all functions The bowels and bladder must be regularly relieved Personal cleanliness is to be insisted on and means provided for proper baths attention to mouth and teeth, care of the hair and nails self regulation and self control should be encouraged as far as may be possible It is well to remember that the clinical thermometer is an instrument of much service when wisely used, but in early life the temperature is readily raised by slight and temporary influences The normal

temperature of the healthy child, when taken in the arm pit is about 98 4 F

Sexual differences are discernible from earliest days The importance of the sexual instinct even in early life has of recent years been forcibly insisted on by Freud and his disciples At puberty and during adolescence the sex factor exercises profound influence on mental and moral states It is well that parents and teachers should give heed to the physiological distinctions and anat omical characteristics which mark the development of active sexual life and the establishment of secondary sexual characters The importance of individual instruction in racial or sex hygiene is now generally recognized

Psycho-Physiological Considerations Each por tion of the developmental period may be said to have more or less special and to some extent distinctive psychological and physiological charac teristics and no attempt will successfully dis sociate them Their presence development manifes tations and effectiveness for individual and com munity service depend on racial family and indi vidual inheritance the action of environment and the special processes of education

The nervous system provides the material basis of mind The brain is the organ of mental powers and whatever is prejudicial to the development and active functioning of the nervous elements must hinder and hamper mental processes Prior to birth the brain spinal cord nerves and sense organs have reached a highly elaborated degree of development and although during the early period of infancy there is little or no evidence of the activities of mind as we understand them yet a rapid mental evolution is in process and should damage be done to the nervous tissues irreparable mental disorder or disaster will probably result Very early in the life of the child evidences appear of the dawn of mind The senses undergo pro gressive development and training powers of per ception are established memory begins to store her treasury reasoning powers evolve human instincts gather force and the intellect and will become established The order nature meaning and manifestations of this wonderful evolution will be explained elsewhere in this volume but it is our desire here to insist on the importance of pro viding effective care and control for the developing organic basis The nutrition of the nervous tissues must be insured by the provision of adequate and suitable food rest and exercise Agents exerting mechanical injury or infective chemical thermal or other causes of disease must be prevented from damaging or attacking the delicate organic cases of the mind Considerable attention has been devoted to the study of early mental development and we now know much regarding the order and form of the appearance of mental faculties The channels for the inrush of stimuli to the brain are the sense organs particularly those of vision and hearing and if these are imperfectly formed or suffer impairment or are lost arrest in mental progress is likely to result Profound influence is exercised by the inflowing to the brain of stimuli through sensory and afferent nerves and by the initiation co ordination and inhibition of muscular movements the higher centres are trained in some of the habits most essential for well being By apathy or ignorance in regard to the care and training of the material elements permanent deterioration of the whole individual may result

During recent years attention has been directed to the importance of a study of the child's uncon scious mind The work of Freud and other students of Psycho analysis have demonstrated its value in the investigation of certain educational problems The teaching of Montessori and other progressive educationists is exercising profound influence on educational principles and practice

Child Pathology The consideration of the path ology of childhood and youth scarcely comes within the scope of this work But the educationist has now to provide ways and means for the care and control of many handicapped lives Some are restricted in their bodily powers by inborn or acquired physical defects while others are the subjects of mental defects However limited and restricted the capacity of the individual may be it is our duty to provide agencies which will enable the fullest degree of development to be reached In dealing with all classes of defective children physiological principles must be applied, and prac tices and methods should be amplified or modified as may be rendered necessary by a recognition of pathological considerations The great aim in dealing with all classes of morbid children is to enable them to approximate as far as may be possible to normal standards T N K

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PHYSIOLOGY, THE TEACHING OF—Before discussing *how* physiology should be taught it is desirable to say a few words as to *why* it should be taught Just as some knowledge of history and literature is necessary in the training of every individual to play his part in the world so some knowledge of the properties of the various things inanimate and living with which he will be brought into contact is also essential in any satisfactory scheme of education This latter kind of knowledge is called natural science Chemistry and physics treat of properties not peculiar to living things physiology treats of life in general with the exclusion of the phenomena of consciousness It is clear that chemical and physical changes are involved in the phenomena met with in living structures so that physiology necessitates a previous study of the preliminary sciences Huxley remarks that "its *subject matter* is a large moiety of the universe and its *position* is midway between the physico chemical and the social sciences The name physiology emphasizes the fact that the functional aspect of life that of incessant change is of preponderant importance Naturally the necessary facts of structure will receive their due attention in connection with the mode of action of organisms and their constituent parts Physiology is the indispensable basis of hygiene frequently all physiology taught in schools has been known as hygiene this is to be deprecated It not only suggests that physiology as such is valueless as mental training but it is also a concession to the mischievous idea that a knowledge of the mechanism of our bodies is unseemly and best left alone by people of refinement This remark naturally leads to the contentious question of the teaching of the physiology of sex I am very strongly of opinion that if the proper point of view be taken much of the foolish and injurious treatment of the subject as matter for coarse jokes or as something to be more or less ashamed of will gradually give place to a rational comprehension of such vitally important problems Much of the difficulty felt by so many teachers and even parents in giving instruction and warning to both sexes would disappear if the physiological aspect were already known, and its essentially noble nature laid stress upon Sins against sexual morality would, I feel convinced, tend to lose a great deal of their attraction

The natural order of teaching in science is chemistry and physics followed by physiology But if this is impracticable it will be found that they may be carried on together provided that the chemical and physical instruction required for any particular physiological problem has been acquired by the time that this problem is reached Moreover, a considerable part of the elements of physiology needs but little chemistry and physics although more is necessary to understand it properly An important point is the provision of a reliable text book It should be written by one who has an intimate knowledge of the subject and at the same time an appreciation of the really important parts from a practical point of view

Method I am inclined to think that especially for junior students classes of a catechetical form are preferable to set lectures Questions and answers serve to keep the attention alert, and experimental illustration is very valuable Practical work on the part of the student himself will be referred to presently Students should be encouraged to ask questions freely about what they do not understand They are apt to be afraid of exposing their ignorance to fellow students and a wise teacher can do much to smooth away reticence of this kind by pointing out the reasonableness of questions asked Lectures are probably of value chiefly to the advanced student They can never be made to cover more than a small part of the matter to be learned and as has been remarked by Sir J J Thomson they may with advantage be used to excite interest by reference to what may be called the "purple patches" of the subject Professor Alexander Smith is of the opinion that lectures produce ability to understand the statements of others rather than that of making correct statements on the part of the student himself This can be better done by giving questions for written answers or essays In the preparation for research work critical examination of published papers is of use but to appreciate the good is better than to devote too much attention to the vulnerability of subsidiary details For the catechetical classes students may with advantage be given reading to do beforehand so that they may be ready with questions to ask about what they may have found difficulty in understanding

Practical Work As to practical classes these undoubtedly take much time But it is to be kept in mind that they are a great mental relief and if time is limited a certain amount of verbal instruction should be sacrificed without regret in order to give opportunity for actual experiment by the students themselves These experiments need not be elaborate or attended by any considerable expenditure It is striking how much can be learned from such a simple experiment as showing that the gas evolved in the burning of sugar in the air is the same as that given out by animals in breathing The more elaborate and difficult experiments can be demonstrated by the teacher, preferably with the assistance of the pupils in turn so far as this is possible It is obvious that the greater number of the facts must be taken on trust but the inestimable value of the experiments made by the student himself is the appreciation gained by him that what is being talked about refers to actual concrete phenomena and is something more

than mere words This is a matter of fundamental importance in scientific instruction of any kind For the purpose of experimental work in physiology the provision of a suitable selection of experiments is as necessary as is that of a suitable text-book for reading

In the teaching of physiology in general it is more important to impart an accurate knowledge of a few fundamental facts and principles than to attempt too much detail or discussion of a wider range Again it is a mistake to give undue prominence to possible objections to certain interpretations of fact when these are founded on good evidence Nothing can be worse than an explanation which is unintelligible or muddled If the evidence on opposite sides is too nicely balanced the student is apt to finish with the complete absence of any opinion or even memory of the facts A clearly stated error as Bacon pointed out can be corrected by better knowledge

It is unnecessary to call attention to the fact that the greater part of the preceding remarks apply not only to the teaching of physiology but to that of science in general and indeed to most teaching W M B

PIANOFORTE, THE TEACHING OF THE — The art of playing the pianoforte has undergone almost as many changes as the construction of the instrument itself and whilst in some respects these changes of method have adapted themselves to the manifold varieties of instrument in use from time to time the aim of most of the chief performers and teachers has been towards the foundation of a clear and brilliant technique and the production of a full tone capable of considerable gradation

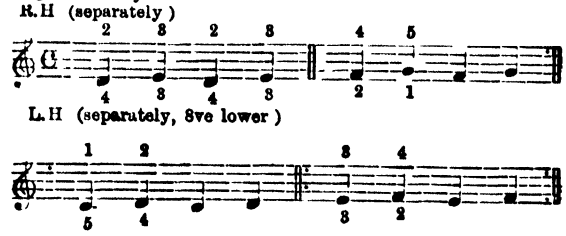
These objects have been sought and achieved by such diverse modern authorities as Clara Schumann Leschetizky and Deppe and though it is obvious that the means employed by various teachers and founders of schools of playing will differ in detail certain elementary principles may be said to govern all sound and careful teaching In this short article it is not however possible to do more than outline a course of study suitable for beginners briefly suggesting the lines upon which such study may be continued and laying stress upon points liable to be neglected during its pursuit

A pianoforte teacher must first of all recognize as Mr Franklin Taylor has pointed out that the demands made by music upon an executant are of three kinds Mechanical intellectual and emotional' For beginners the mechanical side of piano playing must of necessity receive chief attention but inasmuch as in the very early stages of study a pupil is concerned also with the mastery of musical notation and its various complications the intellectual faculty is almost immediately brought into play to some small extent

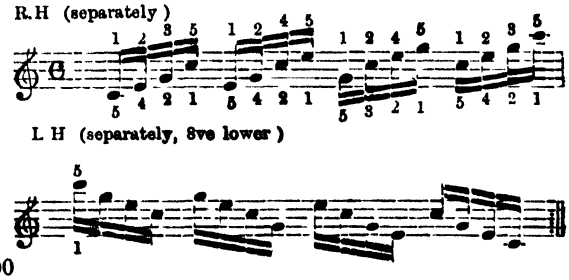
Finger and Wrist Training The pianoforte is in a great measure a mechanical instrument Every sound that is made upon it must be produced by percussion but the force of that percussion can be regulated to a nicety and thus considerable musical variety can be achieved The question of the desirability of cultivating finger action to produce a forceful blow upon the keys is one much debated upon by teachers of differing schools of thought Since however the acquirement of a brilliant finger-touch gives the pupil more command over the keyboard and greater agility and brilliance in playing, it may well be argued that there is no better beginning than the training of the fingers to strike the keys clearly and rapidly Despite all that may be said to the contrary correct movements of the fingers depend upon correct muscular habits If we desire to possess a mastery of gradations of tone the first qualification for this accomplishment will be lacking if our fingers are not trained to perfect independence and if their movements are not completely under our mental control Nor can sensitiveness of touch which is so all-important begin to exist until we are able to exact this obedience from our fingers

At the same time great care must be taken to avoid over straining of the muscles and stiffness, and it may be well in some cases to give exercises to develop suppleness of hand and wrist and looseness of arm in conjunction with the ordinary elementary finger work As a rule the joints of untrained fingers are stiff and unmanageable and the first thing to be acquired is dexterity of movement The pianist has to combat the natural tendency of the hand which is to close in the position of grasping As a result of this tendency the beginner may be inclined to 'hump' the back of his hand and while this is the condition little energy can be given to the touch which needs to come chiefly from the third joint of the fingers—the joint nearest the body of the hand Seated before the middle of the keyboard at a convenient height the learner must keep forearm wrist and hand approximately in a straight line and the fingers curved so that the keys may be struck with the finger tips In the case of the thumb the fore part only (near the nail) should come in contact with the key It may not be necessary to lift the fingers high above the back of the hand but care must be taken that the fingers (including the thumb) have equal firmness and that their upward movements are uniform in distance and downward movements uniform in direction There must be no motion of any kind other than that necessary for striking the keys

To train each finger equally one may begin with a 'slow trill' exercise employing two fingers only at a time The following is the best order in which to practise this since it avoids using the same finger in any two consecutive trills—



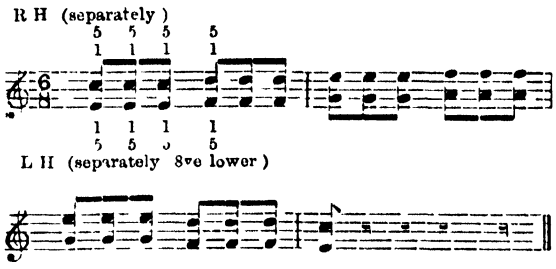
From this one may pass on to ordinary five-finger exercises such as are given in the collections of Schmitt or Plaidy Passages in broken chords similar to the following may next receive attention—



The positions, order of notes and accentuation should be varied as the teacher may determine

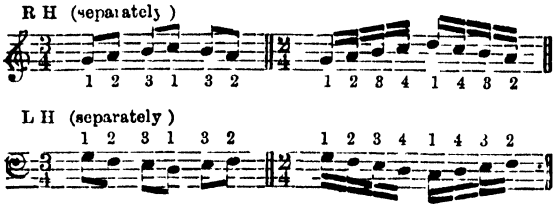
All these exercises should be practised *legato* (i e the movement of the lifting of one finger and the striking of the next should be simultaneous) The sounds of the two notes must not be detached from one another neither must they overlap

These and similar exercises may also be practised with *staccato* or detached touch A pure finger-staccato for single note passages, consists as described by Hummel in 'hurrying the fingers away from the keys very lightly and in an inward direction Wrist staccato is more profitably studied in dealing with passages of double notes preferably sixths and (when the hand is large enough) octaves Simple exercises of repeated notes—



will be found most generally useful in training the wrist

Scales and Touch Before anything more than elementary wrist staccato is undertaken however the student should begin the study of scale playing Here a fresh difficulty confronts him that of passing the thumb smoothly under the hand He may be prepared by the use of exercises such as the following—



in which care should be taken to make the required movement evenly and gradually so that the thumb is situated above its own particular note a little before the time arrives for that key to be struck The hands should be turned or inclined slightly inwards a position which will facilitate this movement

When some proficiency in playing the various scales in Major and Minor keys has been gained extended arpeggios may be attempted In these the difficulty of passing the thumb is greater than in scales for it has to pass a greater distance The pupil must make no jerks or false accents and when the thumb plays every third note it is advisable to practise in distinct groups of *four* notes and thus avoid giving the accent to the thumb in each group

When the student has acquired some finger control he may be taught the principles of *cantabile* touch in which the finger joints are loose and inactive and the tone is produced solely by means of arm weight He must also be made to realize that from the nature of the pianoforte an absolute *legato* is impossible since each note must have a fresh attack The *effect* of true *legato* is nevertheless achieved by command of *variety of tone* In learning to play smoothly by varying the tone of each note, we are taking our first step towards the chief factors in musical expression phrasing and punctuation This is a large subject upon which many books have been written

Sight Reading No article on pianoforte teaching, however brief can be complete without reference to the importance of the study of sight-reading A very distinguished teacher Mr J Alfred Johnstone has recommended that "from the very first lessons one-fourth of the time of each lesson should be spent in going over fresh notes" Quickness of eye is one of the most necessary accomplishments for a pianist for without such quickness, attention due to details of phrasing and interpretation has to be detained for the laborious process of spelling out the mere notes

In conclusion the teacher must be warned against the common practice of pushing his pupils on too fast If he will take the trouble to prepare for himself a comprehensive list of studies and pieces in the order in which they may safely be studied, he will not only save himself continual trouble, but will be sure of making no grievous mistakes in this direction The lists should not only be carefully graded but should give considerable variety of style It is a common error to suppose that the preparation of works of great difficulty renders the mastery of lesser difficulties more easy Safe progress is only possible when careful consideration is given to each step in the pupil's development

T F D

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PIARISTS — 'Clerks Regular of the Pious Schools' also called Poor Clerks of the Mother of God and the Pauline Congregation are a religious Order founded in Rome in 1597 by St Joseph Calasanctius St Joseph had gone about teaching the people and had become convinced of the necessity of providing religious instruction for the children of the poor He opened a school near Rome and as the attendance increased he was obliged to remove it into the city where its size and reputation grew rapidly under the patronage and support of successive popes In 1612 the growth of the school necessitated the purchase of the Torres Palace and in 1617 Calasanctius and his companions took a religious habit and he himself changed his name to Joseph The Society increased greatly during and after the founder's lifetime and now numbers over 2 000 members in the central countries of Europe in Spain Chile and Central America The Piarists have won fame in the sphere of education They provide free education for the poor but also receive pupils from the middle and upper classes Since 1700 they have taught sciences and the liberal arts The course consists of nine classes the plan is uniform as are also the text books, usually compiled by members of the congregation One member of the Order Francis H Czech (*d* 1847) was very successful in his work of teaching the deaf and dumb (See also

than mere words This is a matter of fundamental importance in scientific instruction of any kind For the purpose of experimental work in physiology the provision of a suitable selection of experiments is as necessary as is that of a suitable text-book for reading

In the teaching of physiology in general it is more important to impart an accurate knowledge of a few fundamental facts and principles than to attempt too much detail or discussion of a wider range Again it is a mistake to give undue prominence to possible objections to certain interpretations of fact, when these are founded on good evidence Nothing can be worse than an explanation which is unintelligible or muddled If the evidence on opposite sides is too nicely balanced the student is apt to finish with the complete absence of any opinion or even memory of the facts A clearly stated error as Bacon pointed out can be corrected by better knowledge

It is unnecessary to call attention to the fact that the greater part of the preceding remarks apply not only to the teaching of physiology but to that of science in general and indeed to most teaching W M B

PIANOFORTE, THE TEACHING OF THE — The art of playing the pianoforte has undergone almost as many changes as the construction of the instrument itself and whilst in some respects these changes of method have adapted themselves to the manifold varieties of instrument in use from time to time the aim of most of the chief performers and teachers has been towards the foundation of a clear and brilliant technique and the production of a full tone capable of considerable gradation

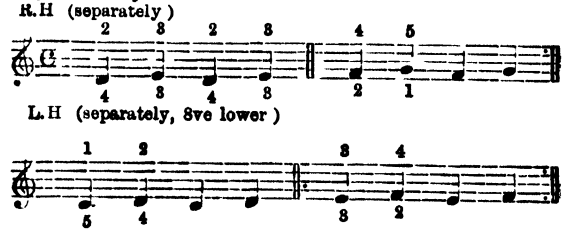
These objects have been sought and achieved by such diverse modern authorities as Clara Schumann Leschetizky and Deppe and though it is obvious that the means employed by various teachers and founders of schools of playing will differ in detail certain elementary principles may be said to govern all sound and careful teaching In this short article it is not however possible to do more than outline a course of study suitable for beginners briefly suggesting the lines upon which such study may be continued and laying stress upon points liable to be neglected during its pursuit

A pianoforte teacher must first of all recognize as Mr Franklin Taylor has pointed out that the demands made by music upon an executant are of three kinds "Mechanical intellectual and emotional" For beginners the mechanical side of piano playing must of necessity receive chief attention but inasmuch as in the very early stages of study a pupil is concerned also with the mastery of musical notation and its various complications the intellectual faculty is almost immediately brought into play to some small extent

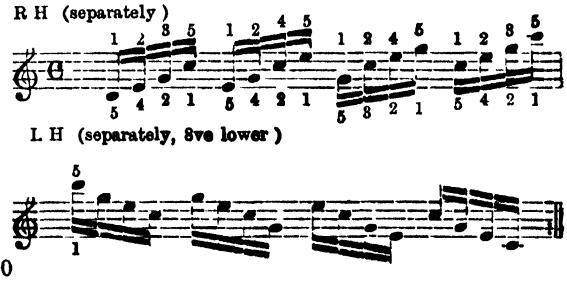
Finger and Wrist Training The pianoforte is in a great measure a mechanical instrument Every sound that is made upon it must be produced by percussion, but the force of that percussion can be regulated to a nicety and thus considerable musical variety can be achieved The question of the desirability of cultivating finger action to produce a forceful blow upon the keys is one much debated upon by teachers of differing schools of thought Since however the acquirement of a brilliant finger-touch gives the pupil more command over the keyboard and greater agility and brilliance in playing, it may well be argued that there is no better beginning than the training of the fingers to strike the keys clearly and rapidly Despite all that may be said to the contrary correct movements of the fingers depend upon correct muscular habits If we desire to possess a mastery of gradations of tone the first qualification for this accomplishment will be lacking if our fingers are not trained to perfect independence and if their movements are not completely under our mental control Nor can sensitiveness of touch, which is so all important begin to exist until we are able to exact this obedience from our fingers

At the same time great care must be taken to avoid over straining of the muscles and stiffness and it may be well in some cases to give exercises to develop suppleness of hand and wrist and looseness of arm in conjunction with the ordinary elementary finger work As a rule the joints of untrained fingers are stiff and unmanageable and the first thing to be acquired is dexterity of movement The pianist has to combat the natural tendency of the hand which is to close in the position of grasping As a result of this tendency the beginner may be inclined to hump the back of his hand and while this is the condition little energy can be given to the touch which needs to come chiefly from the third joint of the fingers—the joint nearest the body of the hand Seated before the middle of the keyboard at a convenient height the learner must keep forearm wrist and hand approximately in a straight line and the fingers curved so that the keys may be struck with the finger tips In the case of the thumb the fore-part only (near the nail) should come in contact with the key It may not be necessary to lift the fingers high above the back of the hand but care must be taken that the fingers (including the thumb) have equal firmness and that their upward movements are uniform in distance and downward movements uniform in direction There must be no motion of any kind other than that necessary for striking the keys

To train each finger equally one may begin with a 'slow trill' exercise employing two fingers only at a time The following is the best order in which to practise this since it avoids using the same finger in any two consecutive trills—



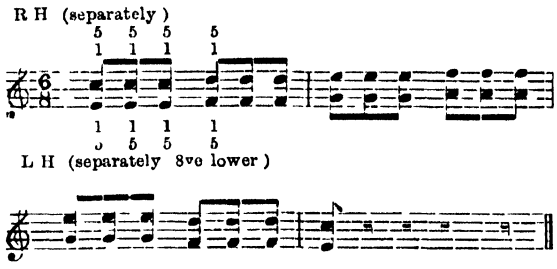
From this one may pass on to ordinary five-finger exercises such as are given in the collections of Schmitt or Plaidy Passages in broken chords similar to the following may next receive attention—



The positions, order of notes, and accentuation should be varied, as the teacher may determine

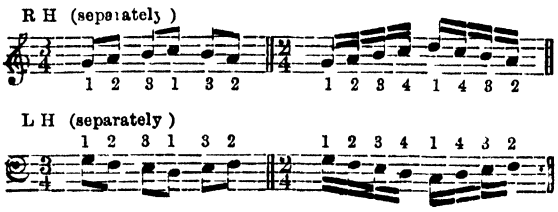
All these exercises should be practised *legato* (i e the movement of the lifting of one finger and the striking of the next should be simultaneous) The sounds of the two notes must not be detached from one another neither must they overlap

These and similar exercises may also be practised with *staccato* or detached touch A pure finger-staccato for single note passages consists as described by Hummel in 'hurrying the fingers away from the keys very lightly and in an inward direction Wrist-staccato is more profitably studied in dealing with passages of double notes preferably sixths and (when the hand is large enough) octaves Simple exercises of repeated notes—



will be found most generally useful in training the wrist

Scales and Touch Before anything more than elementary wrist staccato is undertaken however the student should begin the study of scale playing Here a fresh difficulty confronts him that of passing the thumb smoothly under the hand He may be prepared by the use of exercises such as the following—



in which care should be taken to make the required movement evenly and gradually so that the thumb is situated above its own particular note a little before the time arrives for that key to be struck The hands should be turned or inclined slightly inwards a position which will facilitate this movement

When some proficiency in playing the various scales in Major and Minor keys has been gained extended arpeggios may be attempted In these the difficulty of passing the thumb is greater than in scales for it has to pass a greater distance The pupil must make no jerks or false accents and when the thumb plays every third note, it is advisable to practise in distinct groups of *four* notes, and thus avoid giving the accent to the thumb in each group

When the student has acquired some finger control, he may be taught the principles of *cantabile* touch in which the finger joints are loose and inactive and the tone is produced solely by means of arm-weight He must also be made to realize that from the nature of the pianoforte an absolute *legato* is impossible since each note must have a fresh attack The *effect* of true *legato* is nevertheless achieved by command of *variety of tone* In learning to play smoothly by varying the tone of each note, we are taking our first step towards the chief factors in musical expression phrasing, and punctuation This is a large subject upon which many books have been written

Sight Reading No article on pianoforte teaching, however brief can be complete without reference to the importance of the study of sight-reading A very distinguished teacher Mr J Alfred Johnstone has recommended that "from the very first lessons one fourth of the time of each lesson should be spent in going over fresh notes" Quickness of eye is one of the most necessary accomplishments for a pianist for without such quickness attention due to details of phrasing and interpretation has to be detained for the laborious process of spelling out the mere notes

In conclusion the teacher must be warned against the common practice of pushing his pupils on too fast If he will take the trouble to prepare for himself a comprehensive list of studies and pieces in the order in which they may safely be studied, he will not only save himself continual trouble, but will be sure of making no grievous mistakes in this direction The lists should not only be carefully graded, but should give considerable variety of style It is a common error to suppose that the preparation of works of great difficulty renders the mastery of lesser difficulties more easy Safe progress is only possible when careful consideration is given to each step in the pupil's development

T F D

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ROMAN CATHOLIC CHURCH, THE TEACHING ORDERS OF THE)

PICTURES AS EDUCATIONAL AIDS.—(See DEVICES FOR TEACHING)

PICTURES IN SCHOOLS, THE USE OF— Although the value of pictures as a means of teaching the young and illiterate has been realized for centuries it is only within recent years that the teacher has been able to take full advantage of this exceptionally good method of instruction This is mainly owing to the great advance in excellent cheap colour printing the advent of the picture post card the improvements in photo graphy and the enormous production of well-illustrated papers and magazines Nowadays it is a rare thing to find a school without plenty of good pictures on its walls

The influence of pictures on the child is apparent even in the Baby Room They are almost the first things that catch his eye and when he finds his tongue they are almost the first things of which he speaks to his teacher And this influence which starts so early should be continued right through the child's career and not stop as is often the case when he leaves the Infants' Department

Pictures are one of the readiest means of develop ing the power of imagination and knowing this the teacher is in duty bound to *lead* the children s ideas thus gained along the right lines It is essential that the selection of pictures introduced into the schoolroom should be such as not only to address and awaken the imagination but to guide that power to be noble, and imagination is noble only when " it imagines or conceives the truth (Ruskin)

The moral influence of pictures has been well established The ideal home life reverence for the aged and kindness to animals can be brought home to children by a careful selection of illustrations

By the use of pictures a child s vocabulary and outlook can readily be increased He often hears of things with which he does not and cannot come into contact but by looking at illustrations he is able to visualize them The slum child thus can imagine country life and the country child can get some idea of trams motor- buses and other objects peculiar to large towns

It should be well understood however that a picture should never be substituted for the actual object if the latter can be obtained Nevertheless pictures are necessary and in every school a collec-tion should be made of prints picture post cards, cigarette cards, photographs illustrations from newspapers and magazines etc The children should be encouraged to keep their eyes open for anything pictorial of educational interest and to bring it to school In this way a huge number of illustrations can be obtained which can be classi fied and kept by making scrap books albums and portfolios in a handwork lesson Another practical way of preventing the accumulation of loose pictures is to mount them on sheets of brown paper (4 ft by 2½ ft) and when a set is complete, two slats of wood can be bolted at the top (back and front) The complete thing can then be con veniently hung up and taken down when required Quite a large number of sets of illustrations can thus be placed at the disposal of the various classes

The Pictorial Method In infants' schools the following always make interesting and valuable lessons (*a*) Picture talks, (*b*) story-making from pictures, (*c*) the acting of something seen and talked about in a picture

In the upper departments among the lessons that give plenty of scope for the use of pictures are Oral and written composition history geography Nature study and science, reading, recreative drawing and handwork

As regards wall pictures the decorative point of view should never be lost sight of They should be artistic as well as useful and those intended for the younger children should be large and hung so that they can easily be seen It is also a good plan to change them occasionally from room to room so that the children s interest in them may not cease

There has always been much argument respecting the value of the teacher's own drawings but there is little doubt that they are a great asset in teaching Younger children are taught better by good printed pictures and bad drawings should not be placed before them but with older children a rapid sketch by the teacher is often very effective

Too many pictures on the schoolroom walls cause much mental confusion, and should be avoided but the careful teacher will never regret introducing pictures into the classroom if it is done with a definite educational purpose Their good influence is felt throughout the child s life and has led to a greater appreciation of our public picture galleries V A B

PIETISM —Jacob Spener of Dresden founded a Lutheran sect in Germany the ' Pietists whose best known aims associate them with the English Methodists of a later day As early as 1605 Arndt s *True Christianity* had indicated the religious tendencies on which Pietism was founded a deep sense of the personal side of religion a love of private pious exercises a desire for individual intercourse of the soul with its Maker a diligent study of the Bible and abstention from worldly pleasure Francke met Spener at Dresden in 1689 a spiritual awakening ' resulted and as soon as the former was established in his pastorate at Glaucha near Halle in 1692 he took up educa tional and philanthropic work which resulted in the establishment of the Pietist schools of Halle and placed his name among great educational administrators and reformers Between 1694 and 1714 Francke had established a poor school a *bürger schule* and an orphanage for elementary education a *padagogium* a Latin school and a girls school for secondary education and training courses for teachers in each class of schools Francke published in 1702 a treatise entitled *Short and Simple Instruction How Children are to be guided to True Piety and Christian Wisdom* directly aimed at religious teaching and to him the supreme end of education was the glory of God to be realized in the heart and conscience of the believer In his treatise he advises that children should be taught to attend to observe to reason out cause and effect and that each child should be studied individually In the curriculum of the elementary schools religion had the first place and occupied more than half the school time the remainder being devoted to reading and writing with some hours of arith-metic for those who could read The reading books were Luther's Catechism and the New Testament The hours were 7 to 11 and 2 to 5 in summer two hours less in winter there were no intervals no holidays and no afternoons off (See also BRETHREN OF THE COMMON LIFE)

PISA, THE UNIVERSITY OF —Pisa, as early as the twelfth century was thronged with students who attended its excellent schools of the liberal arts and of jurisprudence and was famous too as early as the thirteenth century, for its medical teaching By a Bull of 3rd September, 1343 it was recognized as the seat of a *studium generale* by Pope Clement VI and masters of the highest renown immediately gave its faculties of law medicine and theology a notable position among Italian universities The suspension of the teachers stipends by the commune in consequence of the adverse political events of 1359 checked its rise and to infuse fresh life into the languishing *studium* it was deemed necessary by Pope Urban V to renew (10th Nov 1364) the privileges accorded by his predecessor The *studium* took a fresh bound forward but the fate of the republic to which its destinies were attached overwhelmed it again in 1406 By the intelligent care of Lorenzo de Medici it was restored in 1475 Again suspended between 1505 and 1515 it subsequently became the object of the strenuous personal care of Cosimo I, who re-organized it and endowed it with new chairs and new foundations among them the botanical garden (1542) the most ancient of its kind known Once again Pisa became a beacon of scientific light famed especially for its school of law but also for its schools of medicine and the natural sciences The name of Galileo marks the culmination of its renown But the decadence of the Medicean dynasty and the general abasement of culture reacted on the Pisan *studium* It rose again however and won admiration as a centre of fruitful scientific activity under the Lorenzian dynasty by whose care it was endowed with an astronomical reflecting telescope an anatomical theatre chemical and physical laboratories museums of natural history and a library

Varying Fortunes in Modern Times During the French occupation, in 1808 the Pisan *studium* became the Pisan Academy and was remodelled on the lines of its prototype at Paris But the Restoration was marked by a reversion to the old form and French methods survived only in the normal school Fused in 1851 with the other schools of the Duchy it formed part of one single Tuscan University and its faculties were reduced to those of philology and philosophy medicine and surgery and mathematics and natural science It again acquired independence on 30th April 1859 and as soon as political conditions permitted resumed a course in conformity with its glorious traditions Endowed with a school of agriculture a veterinary school and a more recent school of practical engineering it is now among the most complete of Italian universities for it has known how to respond to the ever advancing exigencies of culture by a progressive adaptation of its teaching E BESTA

PITCH —The degree of acuteness of a musical sound as indicated by its effect on the human ear and measured by the number of vibrations per second producing the sound French pitch has been in use in France since 1859 when the Government fixed the pitch of C at 522 vibrations per second This was adopted by most countries in 1885 after a conference at Vienna In 1899 the piano trade adopted a pitch with A 439 beats and C 522 In earlier times pitch was somewhat lower

PITMAN, SIR ISAAC (1813–1897) Born and at first educated at Trowbridge, Wiltshire He afterwards went through a course of training at the Borough Road Training College for schoolmasters and from 1832–1836 was master of an endowed school at Barton on-Humber In 1836 he established a British school at Wotton under-Edge Gloucestershire but was dismissed in 1837 because he had joined the Swedenborg Church In 1839 he established a private school at Bath In 1829 he had begun to learn shorthand under Taylor s system and attempted to publish an exposition of the system in a cheap form Bagster the publisher refused to publish Pitman s book, but offered to accept an original system and in 1837 appeared *Stenographic Sound Hand* a four-penny book with two engraved plates In this work Pitman had improved on Taylor s system and emphasized the advantages of writing by *sound* He also introduced paired consonants and the distinction between thick and thin strokes The second edition (1840) was entitled *Phonography or Writing by Sound* Copies were circulated to schoolmasters and Pitman commenced his shorthand propaganda by lecturing during his school holidays Twelve editions of *Phonography* had been issued by 1867 and by that time too a vast number of supplementary volumes had been added—class-books exercise books readers etc Pitman gave up his school in 1843 as well as his travelling and devoted his attention to the preparation of books A Phonetic Society was established the Phonetic Institute Bath became the headquarters of Phonography in 1847 the International Congress and Jubilee of Phonography was celebrated in London in 1887 and Isaac Pitman was knighted in 1894

PITT PRESS (Silver Street Cambridge) —This is the University Printing Press a building in appearance like a college and fronting Pembroke College It was erected in 1831 in memory of the statesman Pitt who was a member of Pembroke from the residue of a fund collected for the purpose of erecting statues of Pitt in Hanover Square London and Westminster Abbey The University had licensed printers from the time of Henry VIII but did not set up a press of its own until the eighteenth century, when influenced by the great scholar and critic Richard Bentley All the official printing of the University is done at the Pitt Press and the building also serves as the quarters of the University Registrar who keeps the record of entrances, degrees etc

PLACE, FRANCIS (1771–1854) —He was son of a bailiff to the Marshalsea Court was born in London sent to various schools and at fourteen apprenticed to a leather breeches maker For many years he devoted himself closely to business and the improvement of his education, occasionally plunging into politics He became acquainted with James Mill and Jeremy Bentham and from 1804 to 1813 helped Joseph Lancaster (*q v*) to organize his associations He was a member of the first committee of the British and Foreign School Society (*q v*) He was associated with Bentham in literary work and with Joseph Hume in Parliamentary work and made a valuable collection of books pamphlets and Parliamentary papers Down to the passing of the Reform Bill of 1833 Place took an active part in the promotion of many social reforms and exerted much political influence In education he supported

Lancaster's appeal for funds in 1797, and sent his son to Lancaster s school at Tooting He assisted in drawing up the first by-laws of the British and Foreign Society and was particular to omit such words as "poor" and "labouring poor," and to avoid the suggestion that the schools were "charity" institutions He advocated the payment of a small fee for the same reason He proposed a system of Lancasterian higher schools in which young teachers might obtain secondary education before commencing their professional life He thought the monitorial system the best possible and expected that the use of monitors would make ushers unnecessary

PLANTIN, CHRISTOPHE (1514-1589) —One of the most celebrated printers of the sixteenth century, was born in Touraine and brought up in Paris where he learnt the elements of his future trade He then visited the best workshops in France before setting up his own establishment at Antwerp The first work printed by Plantin is a translation of an Italian book entitled *I Institution d'une fille de noble maison* and he calls it *premier bourgeon sortant du jardin de mon imprimerie* The accuracy and the beauty of the works issued by the Plantin Press soon extended its reputation and the proprietor rapidly acquired a large fortune His house became a home for scholars he helped many who were in need or difficulty and his printery was constantly visited by great writers such as Corneille Philip II of Spain made Plantin his chief printer and employed him to print a new edition of the Polyglot Bible of Alcala (see XIMENES) of which copies were becoming rare This edition (1569-1572) is considered Plantin s masterpiece but nearly ruined him by its enormous cost In 1576 he had seventeen presses at work but was still in embarrassed circumstances He had other presses at Paris and Leyden which as well as those at Antwerp, passed at his death into the hands of his daughters Plantin was buried in Antwerp Cathedral

PLANTAGENET SCHOOLS — (See ENGLISH SCHOOLS TO EDWARD VI HISTORY OF)

PLANTS AND ANIMALS, INTER-RELATIONS BETWEEN —No general idea except those of "livingness and evolution is more fundamental in Nature study than the idea of the inter related ness of organisms No living creature lives or dies to itself The threads of one life become intertwined with those of other quite different lives and the result is a vast system of linkages or inter relations which may be called "the web of life Darwin refers repeatedly to this idea in the third and fourth chapters of *The Origin of Species* as when he says that "the structure of every organic being is related in the most essential yet often hidden manner to that of all the other organic beings with which it comes into competition for food or residence or from which it has to escape or on which it preys He speaks of it as an idea of "the highest importance" and what we have to do is to suggest how the idea may be planted like a seed in the scholar s mind

1 One might refer, especially with younger pupils, to the intricate course of the threads in a woven fabric like a tablecloth—how difficult it is for those not familiar with weaving to tell where a particular thread will lead to or what will be the result of pulling one out Just in the same way, few could have predicted the disastrous results of importing rabbits into Australia or sparrows into the United States

2 In the web of a garden spider, we see an intricate system subtly bound together, so that tremors in one corner are passed to the special line that leads to where the spinner lurks She is often off the web altogether but she knows by the kind of vibrations what kind of visitor to prepare for So in the web of life many intricate linkages bind lives together in mutual influence Thus squirrels may have an influence on the harvest and water-wagtails on the success of sheep-farming Squirrels often eat young wood-pigeons and thus put a check on one of the farmer s worst enemies and the water wagtail is fond of the small freshwater snails which are the indispensable hosts of the early stages of the liver fluke—a formidable parasite of sheep in the wetter parts of the country It is one of the fascinating sights of the country that one sees when acres of pasture land or ploughed field are covered with myriads of fallen gossamer threads that have served their purpose as parachutes bearing small spiders on the wings of the wind from one parish to another This ballooning which Jonathan Edwards as a boy was one of the first to under stand may be explained to pupils who have wondered at the sight and then the beautiful vision of the quivering 'dew bediamonded entanglement will serve as a fine counterpart of the web of life that stretches over the whole realm of organisms

3 Familiar to most young people both in town and country are the countless circles made of a summer evening by mayflies and the like on the surface of a pond or of a quiet reach of a river Their interactions are beyond analysis and they afford an image of the infinitude of inter relations in animate Nature There is no isolation there are always wheels within wheels The destruction of the Eastern white heron for the sake of its beautiful plumes has affected the rice fields of India and China where the bird seems normally to exert by eating certain animals a beneficial influence on the crops

The Correlation of Organs 4 One of the big facts of physiology is the correlation of organs—the way in which certain organs like heart and lungs are closely bound up together being members one of another As St Paul said the body is 'tempered together so that the various members have a common concern for one another' Similarly though living creatures are not concerned for one another beyond the range of kinship there is a correlation of organisms a smoothly working inter-dependence, so that the one without the other is not made perfect It is as if they worked into one another s hands The earthworm as Gilbert White said makes way for the rootlets and the rain drops and the squirrel often plants a tree The termites prune off the decaying branches in the forest and there are numerous carnivorous plants which turn the tables on animals

5 **Presentation of the Idea to a Class** What we are concerned with here is the educational presentation of the idea of inter-relations and we have suggested various avenues of approach with concrete illustrations of the theme Some of the classic examples should be given and best of all in spite of familiarity is Darwin's story of the linkage between cats and the clover crop The ovules of

the red clover do not become real fertile seeds unless the humble-bee carries the fertilizing dust or pollen from flower to flower A hundred heads of clover protected from the visits of bees produced not a single seed while a hundred heads to which the bees had free access produced 2 700 seeds The more humble bees the better next year's clover crop But the number of humble-bees in any district depends in great measure on the number of field-mice (voles), which destroy their combs and nests So the more voles the fewer humble-bees But the cats from the villages kill the voles, so the more cats the better next year s clover crop

6 Many other examples of inter-relations will be found in the chapters on The Web of Life in Thomson s *Study of Animal Life* and *The Wonder of Life* in Kerner s *Natural History of Plants* and in Geddes s *Chapters in Modern Botany* We can not do more in the available space than suggest a grouping—

(*a*) There is the general balance of Nature that animals depend directly or indirectly on plants for food Green plants feed on air water, and salts, which with the aid of the sunlight they build up into nutritive carbohydrates, fats and proteids Many animals feed on other animals but in the long run the animal world is dependent on the plant world The mackerel feeds in great part on copepod crustaceans and these depend on microscopic Infusorians and Diatoms Many fishes and other animals living on the floor of shallow seas subsist in great part on the vegetable detritus washed outwards and downwards from the sea grass and sea weeds that grow in the shore waters

(*b*) Bacteria which are usually ranked as plants play a manifold *rôle* in the economy of Nature and are of fundamental importance in reducing the dead bodies of animals to relatively simple materials which may again form the food of ordinary plants The destructive agency of disease producing bac teria is of more importance among domesticated animals and in mankind than in wild Nature

(*c*) Many flowering plants are wholly dependent for pollination on the visits of appropriate insects and there are endless hand and-glove adaptations by virtue of which the flowers and the insects make the most of one another

(*d*) Many animals play an essential part in the distribution of the seeds of plants The hard-skinned seeds often pass through the food-canal of birds without being digested and may be planted far from their place of origin Ants appear to dis seminate the seeds of gorse broom and some other plants and Darwin once got eighty seeds to germinate from one clodlet on a bird s foot

(*e*) Then there is a medley of remarkable link ages such as we see in the carnivorous plants in the parasitism of many animals on plants in the forma tion of galls in internal partnerships (*symbiosis*) between unicellular algae and certain animals such as Radiolarians and some corals, in animals that mask themselves with a covering of plants, in the relations between soil Bacteria and soil Protozoa, in the agricultural work of ants termites, and earthworms and so on A study of this interesting subject should lead up to the practical conclusion that it behoves man to exercise great carefulness in his interferences with the long-established balance of Nature whether by way of elimination or introduction J A. T

PLATO AND EDUCATION.—Plato is, first of all, a philosopher "One who is always striving after the complete whole of things both divine and human" (*Rep* VI, 486 A), whose supreme desire is to comprehend the Universe, and as far as possible to attain "the vision of all time and all existence" And inasmuch as the answer to the question, "What is the aim of education ?" lies in the discovery of the meaning of life, the nature of the soul and its place in the universe—it is clear that his theory of education can only be fully understood in relation to his view of the Whole All that can be done, however, in so short an article as this, is to indicate references and to touch on some of the main points

Reality Truth Being—so the Whole is variously named—can be known only by the soul (*Theaet*, 186) or rather by the "soul's pilot" thought or reason (*Phaedrus*, 247) "The absolutely real is the absolutely intelligible" (*Rep* V 477) and so it is only by the exercise of intelligence that the soul can find its true nourishment and realize its divine nature (cf *Phaedrus*, 247 *Rep* VI, 501 B, IX, 589 D), otherwise it lives among shadows and unrealities (*Rep* VII, 534 C) like a prisoner in an underground cave denied the light of the sun (cf *Rep* VII 514) For just as the sun gives light and life coherence and proportion to our visible world so does the supreme object of knowledge, the Truth, bring order out of chaos making for us a coherent and consistent universe and set the soul in its right place This final goal of knowledge the end which is also the beginning—the alpha and omega—is described (*Rep* VII 51) as the "Form' (*i e* the general or universal conception)—the inner reality and self—of the Good In fact conduct as well as thought—practice no less than theory (*cf* such questions as "What is the *good* of this ?" "What is *good* for me ?')—bears witness to this as the fundamental quest

Having seen what is the destiny of man and the only worthy aim of human endeavour we have not far to seek for the end of education The educator must see to it that the soul has its proper nourish ment The divine element is there (*Rep* X, 611 E), but he has to awaken and to direct it by means of the visible world of "phenomena" (appearances), to the truth and reality which give these their meaning that his pupil "may so pass through things temporal that he finally lose not the things eternal" The aim is, in fact, nothing less than the 'conversion" of the soul, as is shown in *Rep* VII, 518 C (*cf* also 521) Any education which aims at a complete human development must arouse a passionate desire for truth (*Rep* VI 485, 490), for the pursuit of truth is no light undertaking and the conversion of the soul no mere "turning over of an oyster-shell" (*Rep* VII 521) It demands, moreover an intelligence well endowed (*Rep* VI, 485 486) for the road is long and steep So it comes about that the highest education is attainable only by the few, not by the many (*Rep* VI, 494), and these last must be content to take a lower place, cultivating "social" or "civic" virtue, in obedience to the laws laid down for them by those who know (*Rep* IX, 590 C D , *Phaedo* 82 and 68–69, and *Politicus* 300) and doing each his own appropriate work in the State (*Rep* IV, 421) Their education will be largely a training in good habits (*Rep* III, 401, *Laws*, II 653 and *Rep* VI, 522), which even their play may help to form, so that they acquire thus the technical skill necessary for the various handicrafts (*Laws*, I, 643), while

wholesome and beautiful surroundings will mould their tastes and their character into harmony with what is noble and good (*Rep* III, 401 and also IV, 430, where they are described as ' taking the dye of the laws ")

But it is the highest type of education (*Laws* I 643–4), such as is to fit men to rule others with which we are most concerned Plato constantly asserts that the welfare of the State depends on the rulers having a grasp of Truth and Reality—*e g* in the bold paradox of *Republic* Book V, 473 " Until philosophers are kings, or the kings and princes of this world have the spirit and power of philosophy cities will never have rest from their evils " He goes on to show (Book VI) that the reason why this is regarded as such a paradox is the existing defective education in philosophy (*Rep* VI 498 A) Youngsters devote to it only the time saved from money making and affairs and, " as soon as they come within sight of the most abstract and difficult part they take themselves off," whereas such a study requires the devotion of a lifetime, including even physical exercise, in order " that they may have their bodies to give in the service of philosophy

Curriculum. So Plato proceeds to unfold his curriculum The guardian of the State must not be content with the lower kind of education, he must " take the longer circuit and toil at learning as well as at gymnastics or he will never reach the highest knowledge of all, which is his proper calling " (*Rep* VI 504 D) Education in childhood is to be presented as a sort of play and not made distasteful by compulsion (*Rep* VII, 536–7), " because a freeman ought not to be a slave in the acquisition of knowledge of any kind In this way the elements of arithmetic (*cf* the games suggested in *Laws* VII, 819) and geometry may be learned while music and literature become familiar through song and dance and story (*Laws* VII 800 VII 654 and *Rep* II and III) But in these latter great care must be taken to train the taste by banishing all that is ugly and vicious and inharmonious (*Rep* III, and especially 401) The young people must not be allowed even to act in play the part of a base character ' lest from imitation they should come to be what they imitate imitation growing into habit and so becoming second nature (*Rep* III 395 and for the importance of habit *cf Rep* IV 424–5 *Laws* II 656 and VII 797)

So important is the effect of early education (*Rep* IV, 425 VI, 491) that " the legislators ought not to allow the education of children to become a secondary or accidental matter In the first place he who would be rightly provident about them should begin by taking care that he is elected who of all the citizens is in every way best him the legislator shall do his utmost to appoint guardian and superintendent (*Laws* VI, 766) Education is to be compulsory for both sexes alike and " the pupils shall be regarded as belonging to the State rather than to their parents " (*Laws* VII 804) Special buildings are to be provided and large grounds for exercise and also dwellings for teachers " who shall be brought from foreign parts by pay " (*Laws* VII 804) Many points of interest in nursery and kindergarten education are dealt with in Book VII of the *Laws* as for instance that infants should not be swaddled and that nurses should not be allowed to let children walk too soon but should carry them up to the age of three years After this, they must have play, " children at that age have certain natural modes of amusement, which they find out for themselves when they meet " (*Laws*, VII, 794) So they are " to meet at the temples of the villages and the nurses are to see that they behave properly and orderly " Now is the time when moral training has to begin, but, in punishing, one must take care not to arouse resentment (*Laws*, VII 794) After the age of 6 years the sexes are to be separated, though boys and girls alike may learn horsemanship and the use of arms (*ibid* cf *Rep*, V) Also Plato recommends the equal use of both right and left hand " in the use of the hands we are, as it were maimed by the folly of nurses and mothers for although our several limbs are by Nature balanced, we create a difference in them by bad habit ' (*Laws VII*)

Method In the *Laws* as in the *Republic* music and gymnastics form the staple of education during school age (In the *Laws* (Book VII 809–10) it is recommended that three school years (10–13) should be spent in learning to read and write, and the next three years at the lyre and after this should come dancing and gymnastics) But " as life advances and the soul begins to mature let them increase the *gymnastics appropriate to it* (*i e* the soul) " (*Rep* VI 498) This is something which music and literature are found incapable of supplying These indeed give rhythm and harmony but not understanding—*i e* scientific knowledge—(*cf Rep* VI 506) by which alone as we have seen can the soul attain to Truth and Reality The lower education dealt only with sensible phenomena and their likenesses (in art)—mere images both and matters therefore not of knowledge since the object of this is reality but of mere opinion (" doxa) that which appears or seems (dokei) to us to be so and so (*Rep* V 478) The higher education must carry the soul beyond these to the reality of which they are the shadows it must enable her to rise " from the many particulars of sense to the one universal of reason ' (*Phaedrus* 249 *cf Rep* VII, 528) So the educator s chief business is to arouse the latent capacity for thought

Plato's master Socrates had brilliantly manifested the nature of universals finding in them a firm foothold amid the flood of changing phenomena Moreover to enable others to reach the same firm foothold he had invented a marvellously effective method The older method of teaching had been (and was still even in spite of the sophists aptitude for argument) an attempt to do as Thrasymachus suggests in Book I of the *Republic* " Take the argument and put it into your soul (*Rep* I 345 B) The new Socratic method the " elenchus ' used question and answer so that the pupil discovering his own ignorance was aroused to an eager search for some clue to the truth *cf* the condemnation of " certain professors of education who say that they can put knowledge into the soul like sight into blind eyes whereas in fact, the capacity exists in the soul already the " organ " of learning, as the eye is the organ of sight and the art of education is the turning of this from darkness to light " (*Rep* VII 518)

In the *Sophist* Plato declares that so essential is this method (*i e* inducing a conviction of ignorance by question and answer) that no one can be considered truly educated who has not had his soul thus " purified ' (*Soph* 230 E " for as the physician considers that the body will receive no benefit from taking food until the internal obstacles have been removed, so , etc "), " he must be purged of

his prejudices first, and made to think that he knows only what he knows and no more" This purging away of false notions by question and answer, in order to reach the inner meaning, the essential nature, of the subject under discussion, *i e* "what each is itself" (so amply exemplified in the *Dialogues*), finds its culmination in the study of "dialectic" All the previous stages of education are to lead up to this (*Rep* VII, 534 end of Book VI) The subject that Plato suggests as lending itself to this process is, in the first place, arithmetic for, since the conception of number is reached only by abstraction from sensible phenomena "it evidently necessitates the use of pure intelligence in the attainment of pure truth (*Rep* VII, 526) Next in order comes plane geometry, to be pursued—like arithmetic—not with a view to practical utility but to abstract thought and the understanding of the universe (*Rep* 526) "to make more easy the vision of the Form of Good' Solid geometry follows, and then problems in astronomy—solids in motion (*Rep* 530)—and problems in harmonics Finally the pupil is to be led to see the connection between these various sciences, he must examine the data which he has so far taken for granted and apply to them also the same scientific method of dialectic (*Rep* 533) this is the only way by which he may arrive at the essential nature of all things and so understand the Whole enjoying at last "the vision of all time and all existence (*Rep* VI 486 A)

This converse with Truth and Reality will ennoble the character (*Rep* VI 500) and moreover those who are admitted to these studies will be taught their duty to the State (*Rep* VII, 520) so that when the years of their student-life are over they may be ready to take up their work in the government of the Commonwealth

The Higher Education of Rulers It should be noted that the games and pursuits of childhood and youth were to serve as a guide to the authorities in their selection of those who were fitted to undertake the course of serious study (*Rep* VII 537) This was to begin at the age of 20 (when the necessary course of physical training would be complete) and another ten years would bring them to the study of 'dialectic (Plato is emphatic in his condemnation of a too early study of philosophy *Rep* VII 538–9) After five years (30–35) devoted to the supreme study the young men are qualified to hold office in the State and this they must do until the age of 50 when they may return to the study of philosophy (*Rep* VII 540) for "the time has now arrived at which they must raise the eye of the soul to the universal light which lightens all things and behold the absolute Good (lit the Good itself) for that is the pattern according to which they are to order the State and the lives of individuals, and the remainder of their own lives also, making philosophy their chief pursuit, but, when their turn comes toiling also at politics and ruling for the public good not as though they were performing some heroic action but simply as a matter of duty, and when they have brought up in each generation others like themselves and left them in their place to be governors of the State, then they will depart to the Islands of the Blest and dwell there" (*Rep* VII 540)

So Education reproduces itself, and the task assigned to the noblest and most highly educated is to educate in their turn the succeeding generation, and, in fact "the State, if once started well, goes on growing like a circle For, when good nurture and education are maintained, they induce good natures, and again good natures laying hold of such an education (as we have described) grow still better than those before them" (*Rep* IV, 424 A). So potent and essential Plato finds, is Education as a means to the attainment of a complete life alike for the State and the individual

M H W

PLASTER AS AN EDUCATIONAL MEDIUM.—(See CHALK AND PLASTER AS EDUCATIONAL MEDIA)

PLASTICINE MODELLING—(See MODELLING [CLAY] THE TEACHING OF)

PLAUTUS AND SCHOOL DRAMA—(See DRAMA, SCHOOL)

PLAY CENTRES—The value of facilities for organized play in crowded city areas and the duty of providing them by the public authorities has been recognized far longer in the United States and Canada than in England The city playground, with its games grounds, its spaces for the little ones and its building for indoor uses is to be found in most of the larger cities in America, while occasionally in areas where playgrounds are impossible, whole streets are closed to traffic so that the children may play safely It is recognized too that the provision of space alone is not sufficient, and skilled supervisors are appointed to organize games and superintend A visitor from the United States is horrified at our small school playgrounds too often closed outside school hours, or, if open unprovided with any of the facilities for games and under no supervision other than that of the schoolkeeper whose duty is merely to prevent damage to property

The fact that organized games provide training and discipline in elementary as well as secondary schools has now been recognized, and such games find a place in the curricula of most elementary schools but local authorities have been very averse to accepting any responsibility for their provision outside school hours A walk through town streets on any summer evening or school holiday will show the need for it and now that it is more generally accepted that education is not limited to the 5½ hours of set school work, but is continued for good or ill in the remaining hours of a child's day it is to be hoped that play centres will be established in the poorer areas of all large towns

Associations for Founding Play Centres. As is always the case the pioneer work in providing recreation centres was begun by voluntary agencies. The Children's Happy Evenings' Association, founded in 1888 maintained play hours after school about once a week in many districts By 1914 there were ninety four centres in London and forty one in the provinces, but on the outbreak of war the centres were closed and the Association is now disbanded The Play Centres Association, founded later by Mrs Humphry Ward opened centres for two hours on five days in the week in some of the poorest London schools In the winter 1917–1918 there were twenty-nine such centres instead of the 200 required for a school population of 800 000 [1] The first provision of vacation schools and classes was due to Mrs Humphry Ward also

[1] Report on Evening Play Centres for the fifteen months (1st Jan., 1917, to 31st Mar, 1918)

The Provision of State Grants. The power to provide such schools and play centres, or to assist voluntary agencies in providing them was given to local authorities under the Education (Administrative Provisions) Act 1907, but the power was not largely used, the stimulus of State grants being lacking until the increase of juvenile crime during the war drew the attention of the authorities to the need for the supervision of the children's leisure hours The Home Office as the State department responsible for delinquent children, founded juvenile organizations committees to stir up the voluntary clubs brigades and Scout troops co-ordinate the work and assist in the collection of funds by obtaining tax concessions from the Treasury hoping thus to increase the opportunities for organized recreation outside school and work hours The Board of Education a little later offered a State grant of half the expenditure on the maintenance of evening play centres maintained to suit the requirements of the Board of Education by or in co-operation with local education authorities This grant was first payable in the year beginning 1st April 1918 the first payments being based on the work done between 1st August 1917 and 1st April 1918 The provision of these grants has led to a large increase in the number of play centres For the year ending 31st July 1917 seventy one centres were recognized under the regulations By 31st March 1918 the number had increased to 171 A number of voluntary bodies had also been encouraged to provide centres

"The work of the Centres has undoubtedly attained a wide measure of success and appreciation of its value has led a number of authorities to extend the provision originally contemplated '[1] In London the Education Committee has delegated its powers to Mrs Humphry Ward s Association which is receiving the grant

The Purpose of Play Centres As stated in the suggestions issued by the Board the purpose of play centres is to gather in those children who would otherwise be in the street The centres are for the difficult children not for the good ones Continuity of interest must be preserved so that the centres should be open for at least three nights a week throughout the year and for not less than 1½ hours The occupations should include organized games singing dancing acting and manual employments such as painting and needlework for the girls kindergarten employments for the little ones and woodwork and cobbling for the boys In the summer outdoor recreation is recommended The spirit of the centre must be one of relaxation and play so that as much license as possible must be given the children in choosing their occupations and training in character is given by the inculcation of thoughtfulness and consideration for others and of the spirit of co operation and fair play In this way play centres become not merely agencies performing the negative work of withdrawing the children from the temptations of the streets but active instruments in the development of character They give much pleasure but they also offer through kindly supervision the opportunities for healthy growth and imaginative stimulus which are necessary where parental interest and discipline are lacking, and the children s homes offer no opportunities for healthy play H W J

[1] Annual Report of the Board of Education for the year 1917 to 1918.

PLAY GARDENS —In 1911 an experiment was made by the King Alfred School Society for the benefit of the younger brothers and sisters of the children attending their school in Hampstead The age of these children ranged from about 3 to 6 years and for them a scheme of educational play was devised which taking place almost entirely in the open air combined health, knowledge and pleasure Such educational play required the services of an experienced and sympathetic teacher who would bridge the gap for the child between the nursery and the school For children over 6 ordinary school subjects have been introduced into the curriculum and the title 'Play Garden" having become a misnomer it has been changed to "Garden School

The curriculum includes lessons in reading writing number introductory history geography geometry and drill, etc a great deal of handwork of a definite form and much Nature work

It is easy to form a new 'play garden or "garden school if a few parents of young children will meet together and discuss the education of their own children on reformed lines They will first form themselves into a working committee which will seek for a field or garden near and engage an enthusiastic teacher willing to make the best of simple beginnings An old Army tent is a good makeshift luxuries can be added when fees will allow or gifts are forthcoming It is advisable to start with a large platform raised from the ground on little piers of brick the boards slightly separated to allow the water to run between Grass if kept short is good for play summer or winter but when it once becomes worn both mud and dust are unpleasant—hence the need of a large platform open to the sky

The building or shelter should be of pitch pine or iron On the north east and west sides windows will range and on the whole of the south side two large open doors are hung leading on to the platform

All pioneers should remember that a wind screen is of more importance to the comfort of the open air student than even a roof over his head

The play garden provides a garden for each child plots for vegetables corn and fruit planted by and belonging to the community a sand pit and a miniature pond a rock garden live pets and plenty of space for games

Arrangements are made for the convenience and comfort of the child and the time table is planned to ensure a gradual transition to the ordinary school work In the case of the youngest children it is found that their needs are met by plenty of varied occupation—both guided and free—with many kinds of material alternated with songs stories games and talks on living things or other suitable topics

It is now a recognized fact that children who are much in the open air enjoy better health and are proof against many diseases It has certainly been found in the play gardens that children who have attended both winter and summer have improved in general health It may be added that there have been no epidemics (several started but none spread beyond the original victim), and but few cases of infantile complaints Except in cases of heart trouble when the advice of a medical expert should be sought all delicate children thrive, and the naturally healthy remain healthy and preserve their childlike ways of which the ordinary school too often robs them MRS E L CLAREMONT

PLAY, THE HYGIENE OF.—For centuries the body has been regarded as a hindrance to the mind, and some religious sects still apparently cling to the opinion that the soul gains in proportion as the body is neglected Fortunately, however, it is now realized by a considerable section of the public that full development of the mind is impossible unless the body progresses *pari passu* Wholesome discipline of the body is necessary but such a result is not attained by neglect Real discipline of the body is best achieved by exercise of such a nature that every voluntary muscle of the body is com pletely under the control of the mind Only in such circumstances is real mastery by the mind brought about

In healthy children the desire for muscular activity is irrepressible and exhibits itself in mere 'restlessness' if attempt is made at repression Far better is it to direct the energy usefully by enabling it to bring the physical mechanism of the body to its highest pitch and its most perfect development Children however find all exercise in the form of drill very dull work and they soon tire Only by capturing the child s interest in what is being done is it possible to obtain the full benefits of exercise and this condition is fulfilled best and most easily by games In games the muscular movement is directed to the achievement of some object which has nothing to do with the bodily development and in this way the interest of the child is secured and the sense of fatigue is lost

In dealing with groups of children it is possible to secure the best results only by means of organized games Organization of the play is necessary in order to prevent waste of time but there must not be too much "organization' and the children must not feel that they are being organized other wise the full physiological effects of the play will not be obtained Girls in particular being more defective in the play instinct and more prone to morbid emotionalism and sentimentality are in special need of organized games and respond amazingly to them

Formal exercises performed with a set purpose are unduly fatiguing to children and compared with games must always play a secondary part in any successful scheme for physical development Among older persons the converse is to some extent true because the more mature mind is able to grasp the aim of the exercises and to become interested in the end in view thereby losing the sense of fatigue In schools the proper use of set exercises seems to be to fill comparatively short intervals between lessons Periods of from ten to twenty minutes between lessons may be occupied profit-ably in this way but such exercises must not be regarded as satisfactory substitutes for games The organization of field games swimming etc in connection with public elementary schools is at least as important as with secondary schools and public schools By these means the individual development of the children in the direction of resourcefulness self reliance inter-dependence and mutual aid is fostered and their physical develop ment encouraged along natural lines

Physiological Effects of Exercise The first of the physiological effects of exercise is the quickening of the heart beat and the rate of respiration Unaccustomed exercise of a violent nature may lead to disastrous results by making too great a demand upon the heart and for this reason it is important not only to weed out all children who already suffer from heart defects, but also to increase very gradually the exercises that are undertaken The effect of the quickening of respiration is an increased elimination of respiratory impurities, the amount being increased at least threefold by vigorous exercise From this it follows that exercise indoors is likely to lead to a rapid fouling of the atmosphere and should only take place for short periods with widely open doors and windows

The skin acts freely while exercise is being taken, and the secretion of sweat is accelerated, thereby increasing the rate of excretion of waste matter from the body Other effects of exercise include the exhilaration and strengthening of the nervous system the improvement of the appetite and digestion and the stimulation of the kidneys and bowels thereby aiding the elimination of waste matters

The full benefit of games and exercises cannot be obtained if the movements of the body particularly the movements of respiration are hampered by restrictive garments In boys' departments collars and coats should always be removed The wearing of tight belts round the waist should be discouraged, as it greatly increases the possibility of "rupture" In girls departments loose clothing particularly loose collars wristbands and waistbands should be insisted upon and no corsets should be allowed Knickers and simple loose tunic dresses should be worn Both boys and girls should wear special clothes for games both on the ground of economy and of health and these clothes should be changed as soon as the game is over R A L

PLAYFAIR, LYON (1818–1898) —First Baron Playfair of St Andrews educated at St Andrews Glasgow and Edinburgh for the medical profession, studied chemistry under Liebig at Giessen (1839–1840) and became honorary Professor of Chemistry to the Royal Institution Manchester (1842–1845) He prepared an English edition of Liebig's book on organic chemistry applied to agriculture and vegetable physiology In 1845 he was appointed chemist to the Geological Survey and professor to the School of Mines in London and was engaged in the inquiry into the potato disease in Ireland In 1850 he took part as a member of the executive in the organization of the Great Exhibition and was a prominent supporter of the Prince Consort's endeavours to secure technical instruction in the application of science to industry In 1853 he became secretary for science in the new Science and Art Department and took a leading share in organizing the Royal College of Science and the South Kensington Museum In 1858 he became professor of chemistry at Edinburgh but still engaged in much public work especially on Royal Commissions including those on the Civil Service, the Scottish universities and endowed schools From 1868 to 1885 he was M P for the universities of Edinburgh and St Andrews and during that period exerted a strong influence in favour of the improvement of the education of the people He was Deputy Speaker of the House of Commons from 1880 to 1883 and received his peerage in 1892

PLAY IN EDUCATION —Play is whatever is worth doing for its own sake It is the satisfaction both in children and in grown people of the instincts —or innate tendencies to conscious action—other than fear, the avoidance of pain and discomfort,

and the physical hungers for air, food and the sexual relation

Some people Herr Karl Groos for instance would except in their definition of play the "serious manifestations of these instincts—meaning those that help to preserve the individual or the species Such limitation may be desirable in biology but would be a stumbling block in dealing with education In the case of some of the instincts—such as curiosity nurture rhythm—there is no special kind of manifestation that could be distinguished as serious in that sense and in the rest—such as hunting and fighting—the difference as seen from the inside is merely that the "serious form when it appears is usually (but not always) the more intense Meantime play is to the child precisely the most serious thing in life And it is the play instincts especially that of belonging or loyalty that constitute the most serious element in work

Instincts expressed in Play The most important instincts expressed in play are those toward making knowing nurture rhythm hunting fighting belonging and self assertion The last named is the instinct of self creation and self preservation in the ethical sense and involves the assertion and maintenance of a social personality

There are many play instincts ancillary to the above such as handling and controlling dissecting exploring classifying teaching and petting chasing lying in wait jumping upon and throwing down hiding and running away striking and wrestling talking leading following imitating and running with the crowd

There are also preliminary instincts urging the practice of the rudimentary powers on which the exercise of all the rest depends—such as grasping wielding digging locomotion walking running jumping Climbing and escaping instincts of much importance in children s play belong also to this class

The Relation of Play and Growth All these instincts it will be observed are in bud or blossom tendencies toward those forms of action in which human efficiency consists Their function in the child is to superintend his growth They are set to work in him in plastic infancy to mould him to their service Such indeed as Herr Groos has pointed out in his *Play of Animals and Play of Man* is the explanation of the whole phenomenon of infancy

Specifically the part of play in growth is two fold So far as the structure of body and mind is pre determined play is the condition of their realization But to a great extent the body and mind of man are not pre determined The form of bone and muscle depends partly upon their use Nervous co ordinations and mental habits are the direct result of action And the variety in the expression of the play instincts corresponds to this margin of variation in the instrument thus placed at their disposal These instincts as given to the child are themselves unfinished and become completed only through exercise such as play affords This is particularly true of the more important ones "Make "know 'hunt 'escape' 'fight "nurture" 'belong 'assert yourself" are commands leaving wide discretion as to their execution The building may be made of sand or blocks or paint perhaps of sound or thought and there are many practical problems to be solved in its construction Knowing implies experiment discovery organization the use of a vast variety of methods Hunting may be carried on with sling or bow or gun with hook or net with falcon horse or boat The simplest form of contest or pursuit is very complicated And so with all the rest Even the ancillary instincts thrown out as hints of how to go to work present difficult problems in their application "Throw something at him" involves selection of missile and considerations of direction range and the probable motion of the creature aimed at "Strike him sounds simple until you try it on a living specimen

The gap thus left between each instinct and its execution is filled in by the child with several kinds of structure Through the intense and constant practice and absorbed attention that play prescribes he stamps upon his mind the facts with which the instinct calls on him to deal stores away in the form of habit and acquired reflex an effective method of dealing with them and at the same time trains his body in the execution of such method He thus acquires a second nature supplementary to the first through which he precipitates the great constituent instincts upon practical methods of expression So that man has in the special indefiniteness of his leading instincts and the consequent possibility of variation in their method of expression the great advantage of the adaptation of his mind and body and of the very instincts themselves to his actual environment

And he has another great advantage Through instinctive discipleship as prescribed in the imitative and belonging instincts he tends to make these adaptations in the light of social and therefore cumulative knowledge It is through the teaching of parents of older children of professional teachers and of public opinion and social institutions that the child becomes heir to all that the ages have acquired

The instincts which are thus given through play the charge of human education not only embody the active principles in which man s practical powers are contained—they also comprise his spiritual nature

Play Periods The major play instincts are the elements of human life and genius All the gods are impersonations of them the saints and heroes are their exemplars They are the constituting elements of man and each man is alive in proportion as he embodies them

Play is not the pursuit of pleasure it is obedience to direct commands promulgated in the form of ideals bearing their own credentials on their faces It is the pursuit of ultimates the doing of those things that are worth while for themselves Subordination to these the forgetting of all else in effort toward their realization is its moral attitude

The play instincts do not however all appear at the beginning nor all at once and some of them assume successive forms It results that the child passes through successive stages of growth each dominated by a special group of motives

The first period that of babyhood is lived in the child s spiritual relation to his mother who is then not only his playmate but his social world

Then comes the dramatic age from 3 to 6 ruled by the child s impulse to impersonate whatever interests him expressive of the instincts to know and to project himself into what appears so admirable Rhythm becomes prominent in song, speech, and motion and construction more absorbing

Then comes the Big Injun age from 6 to 11, in

which self-assertion in its more obtrusive form predominates

At 11 the instinct of self-assertion though still growing in intensity is superseded in its leadership by the belonging instinct shown in team games and gangs This from 11 to 21 is the age of loyalty in which Man the Citizen attains his growth It might be divided at 14 because of the appearance at that age of the dawning sense of membership in society as a whole and the consequent strong desire to make good in grown-up life In that case the period from 14 to 21 might be named the apprentice years

Girls are much like boys in the first two periods They are a little more precocious are a little less assertive in the Big Injun age and less given to fighting and they differ greatly from boys during the age of loyalty having much less team sense and no natural tendency to the peculiarly violent plays in which it is expressed The play of sex in the form of coquetry appears earlier in girls than in boys and they are generally thought to be the more romantic at a later period

The order in which the play impulses appear follows to a considerable extent that of their appearance in the race But a child especially in the early stages of development is very different from a grown creature of any epoch and observation is a surer guide to what he tends to do than whatever knowledge we may possess of his remote ancestors The theory of recapitulation is however useful in suggesting what to look for

The importance of recognizing in education the various stages of the child s growth is very great The more important instincts do not actually lapse if they are ignored but their period of stress passes and with it the susceptibility of mind and body to their impress J Lee

PLAY IN SCHOOLS —Play is a vital necessity for all young things and for our poor children from crowded tenements or squalid riverside homes it is the only real outlet for high spirits Play must take the place of all the ordinary joys of childhood —paddling climbing and the hundred and one interests of the more happily placed child

Of the value of carefully organized play to the physique of children little need be said There is a wealth of medical evidence to prove that backs grow straighter eyes more frankly clear that digestions improve and circulations become more effective by means of dancing and ordered rhythmical movement

The old Greeks took count of all this and planned for it in their marvellously thorough way It would be well if educationists to day placed greater value upon the significance of children s play Not all children are imaginative not all possess initiative but to direct even a simple game and dance makes for strength of character It is more true than ever to-day that "children s education must begin with their play

The Moral Value of Games In dance and rhythm and well ordered movement lie the great virtues of self control, and the very essence of civic culture— namely the thinking of others before one s self— lies in the simplest circle game as clearly as ever kernel lay in a nut

Professor Lincoln tells the story of a Mississippi steamboat that had a one-horse-power engine and a two-horse-power whistle When the whistle blew, the steamboat stopped Only too well do city teachers know of little children with a two-power brain and a one power stomach Yet strength of body unless accompanied by strength of mind, is not to be wished for and in any play programme stress should be laid upon such games as ball dances and exercises beginning with the very simplest forms and leading up to those graceful Greek ball dances which are most complicated, and where accuracy of judgment, memory association, reasoning powers and fine sense of order and fitness are all brought into play These ball dances make for correct posture and produce a more efficient and masterful child At all the great English public schools the value of school games is preached and much is said of the training the playing fields afford Surely it is equally necessary that organized play should be provided for the children of the poor They need every whit as much to learn by their games—courage self-respect fair play sympathy and all the other elements that go to build up a strong character

The Revival of Old Customs, Dances, and Recreations It is impossible for all children to have country surroundings but in the cities country dances can be planned explained and learned as well as town games and dances and frequent visits to real green grass are not difficult to arrange

There has been of late and there is still going on, a definite revival of old customs dances and recreations and nowhere has this been more welcomed than in the long grey monotonous streets of South east London The teachers should bear in mind that where large numbers of children are concerned dances and games songs and move ments should be planned accordingly—particularly dances which can be ' played in limited space Such dances as are fully described in the Guild of Play books include large movements for various parts of the body and movements in which the postures are graceful and good from the standpoint of health They can be simply taught to classes of fifty children and they can be learned by an average child in about three lessons

The proper teaching of such dancing to children will tend to lessen the attractiveness of the music-hall and dancing saloon for when once the children know really beautiful movements they will scorn and dislike others Social reformers will not lose sight of the fact that parents take the keenest interest in the dancing and that when properly planned and understood play festivals make for very real ties between school and home life By planning the dances for large numbers no par ticular child is likely to get undue attention or to be given any bias for such dancing—which is the objection so often raised by those who misunder stand the term when applied to organized play for children

> "Happy hearts and happy faces
> Happy play in grassy places
> That was how in ancient ages
> Children grew to kings and sages"

So wrote Robert Louis Stevenson and certainly no one spoke from the child s standpoint with a clearer trumpet-call than he Wholesome play is a fine art and must be cultivated as such Boisterous excitement and joyless apathy must both be avoided and happy and spontaneous movement aimed at Little girl children suffer more in the way of coarsening of manners by street life than do

the boys, for whom there is much more diversity of outlet No amount of drill or school exercises will give the mental and moral balance we desire for the chidren The art of play must be restored and educationists must discover that organized play is nothing more or less than a fine art possessing illimitable resources

Graceful and modest bearing and manners rhythm and beauty of movement may best be cultivated by play To starve the evil and grow the good by simple natural means is the duty and privilege of those who organize play

Education must take the lead and its efforts must not be confined to school time tables or scheduled hours but must invade all public playing spaces, parks and open places as well as halls of entertainment and even the streets and alleys of towns and cities

Merrie England will be revived old songs will be increasingly recovered and made popular and old dances enjoyed by old and young alike if this work is given its proper place Doctors nurses teachers philanthropists lovers of children all and sundry must come increasingly to see that such work is closely bound up with joyous healthfulness upon which so many moral mental and physical interests depend G F K

PLAY, ORGANIZED—The term play suggests as a part of its very essence freedom absence of organization spontaneity This however is a misconception there is no such play and apart from the aimless movement play of very young children all play has to be taught and is acquired by either conscious or unconscious imitation

The great teachers of play from generation to generation have been the mothers and this fact has been given its full significance by Froebel Civilized life with its stress and strain has in many cases however prevented the mothers of the race from fulfilling this most important function and has produced the sad spectacle of children who do not know how to play This fact combined with the need for definite open spaces in which to play has lead to the Playground Movement in England and America which has made such rapid strides in both countries during the last decade In America the movement is about twenty seven years old and has now reached vast dimensions

At first it was considered sufficient to provide playing fields and appiratus but these were soon found quite inadequate unless qualified play leaders were forthcoming This led to the necessity of training such leaders and in many of the universities Chairs of Play have been founded and definite courses of instruction given covering a period of one or two years

Such courses include a careful study of play psychology principles of education playground experience (including apprenticeship and practice work) biology and other allied sciences

The Playground and Recreation Association of America employs field secretaries to tour the country and give advice on matters of organization besides qualified play leaders to supervise the play in the different centres In most of the principal cities public recreation committees have been established and municipal playgrounds laid out under qualified play experts

In England the Playground Movement has not reached the same stage of development bu it has already made rapid strides in three main directions the establishment of evening play centres the organization of vacation play schools the opening of public playgrounds under skilled supervision

Opinion is unanimous both in England and America that the results of the Playground Movement are well marked and show clearly that the work along these lines has assisted in both social and educational advance

A great increase in efficiency and school discipline and a decrease in truancy and child delinquency can be definitely traced to the introduction of organized play and games amongst city children

In this country we have still to establish a system for the definite training of play leaders and the production of experts in play psychology but it is significant that already organized play has been introduced into the curriculum of many of the elementary schools and the demand for experts will soon necessitate the supply It is not too much to hope that the next decade will bring the full recognition of organized play as one of the most powerful factors of education M J R

PLAY, THE GUILD OF—The Guild of Play which was started primarily for the benefit of the children of South east London and carries on its propaganda work from there has developed with such rapidity that it is difficult to meet the demand throughout the country for more information upon the subject

The purpose of the Guild of Play in the interests of little girl children is to provide vigorous happy dances for recreative purposes on educational lines Lectures are given from time to time on the educative meaning of organized play dance recitals are frequently arranged in various parts of London and sometimes in the provinces and a series of books on Guild of Play methods with full details of words and music of songs and dances and clear directions as to steps have been compiled

Distinct principles have been observed in the selection of both songs and music and clear ideals have been aimed at in arranging the dances A system of aesthetic interpretative dancing has been specially arranged to meet the needs of schools as well as individual students The physiological side of the dances is always kept well to the front the dances having been tested in many cases by well known doctors in order that they may be unhesitatingly regarded as a means of physical training All extreme exercises have been omitted from the scheme and though beauty of execution and personal proficiency have certainly been aimed at yet the main idea has been to equip the child for life in the best and broadest sense

Music in relation to dancing is always given its proper place A great deal of elementary work is done in building up rhythms the training of the ear the adaptation of musical forms and the training of the children to fit appropriate movements to music They are further encouraged to create and many of the most beautiful dances as given at festivals and pageants have largely been the creative work of the elder children themselves Lectures on the history of dancing have also been given from time to time and elementary knowledge is freely scattered on all matters of hygiene The course of bare foot dancing for example has had a most wondrous effect upon the personal cleanliness of the children

A great point has been made of fairy tales and the children are encouraged to enact them and

educational visits are planned for the children in connection with beautiful groups of sculpture from which fresh dances are often designed

The Heritage Colony at Chailey The children of South east London who belong to the Guild of Play are now well known for the recitals which they give from time to time in the interests of the Heritage Craft Schools for Cripples at Chailey, Sussex a sister movement which was brought into existence about the same time as the Guild of Play to benefit the crippled children for whom life held such a dreary outlook

The Guild of Play has been in existence for nearly twenty one years There has been built up a certain tradition of old world dancing which is inseparably connected with the very title Guild of Play in the public mind The children are often required for pageants and are delighted to help in any way possible Frequent recitals are planned at the request of teachers and by this means the Guild of Play methods are widely spread

The Guild possesses no permanent headquarters at the moment but the time may come when a hall will be built and endowed in South east London so that the work may be carried on even more effectually than at present

At the Heritage Colony at Chailey where annually, elder children from the Guild of Play are taken to be trained in domestic economy and housewifery in the special school built there for them the results of the Guild of Play work can be seen to better advantage than anywhere else The graceful poise of these little domestic servants in the making their quick alert ways and their teachableness—go to prove beyond the shadow of a doubt that the ball dances have strengthened weak wrists that the folk dances have quickened imagination and that the stately minuet and court dances have all played their part in producing strong healthy children and given them a wider outlook on life

At the Heritage Colony for Cripples at Chailey organized play takes its place side by side with the craft teaching The girls are quite adepts at stool ball an old Sussex game which has been revived with considerable success They have many other activities unknown to city children and they speedily become accustomed to the wide spaces and the joys of the open country It is difficult for visitors to believe that these children are crippled—either girls or boys—until they see them lined up for marching The boys play cricket and football with the best and at both schools there is outdoor gymnastic apparatus upon which the children perform most skilfully

Visitors from all parts of the world come to Chailey and all seem little short of amazed at the results already achieved Those responsible are conscious of many shortcomings and know that there is yet much to be done but they feel increasingly that the activity allowed to each child and the organized play and outdoor work which form so large a part of the school curriculum perform an all important part in the result achieved

G T K

PLAY-THEORIES —It is not easy to extract a satisfactory definition of play from the ordinary uses of the word To equate it with idle or trivial as distinguished from serious activities is to give it too narrow a significance since both children and adults often take their play with great seriousness To identify it with the expression of spontaneity is to make its range too wide the creative labour of the artist and the poet for instance, is essentially spontaneous yet is certainly not play in the ordinary sense Nevertheless these imperfect definitions supply useful elements to a completer concept The first suggests that play is always in some sense a superfluous activity a *parergon*, a clear addition to the activities which the unavoidable conditions of life impose on us The second suggests that any activity partakes of the character of play in so far as it gives scope for the expression of the individual self Hence it is that art the fullest expression of individuality is generally felt to have a close affinity with play

Recent writers on play have usually dealt with it from the biological standpoint Herbert Spencer s observation that it is the manifestation of superfluous energy is of fundamental importance but needs qualification Play does not merely discharge superfluous energy it so directs the outflow as to make the organism, both physically and mentally more efficient Here is the source of its educational value In the accounts of different writers that value is explained with emphasis on different aspects Karl Groos whose views were derived from observations on animals regards play as a biological device intended to practice the young in activities essential in adult life For Stanley Hall it is reminiscence rather than anticipation It is a kind of beneficent atavism the child relives in play much of the adult experience of his distant forebears and in doing so comes into effective possession of his inherited powers of body and mind and also discharges harmlessly many ancient tendencies to savagery and vice The two views seem to be complementary rather than antagonistic

There are two forms of play that cannot readily be brought under Spencer s formula *recreation* and *relaxation* In recreation the play activity is a source of energy instead of a channel of discharge—as in the case of the tired child who becomes instantly refreshed when the walk is turned into a game of hide and seek The explanation appears to be that a mode of activity that has exhausted its proper store of energy is enabled, in recreation to draw upon the great reserves connected with the instincts of fighting flight, etc Relaxation is a process of opposite character A man who is wearied by the strain of maintaining the complex activities that make up his business life seeks relief by simplifying them Like the tired child he turns to activities largely instinctive, such as hunting and fishing for these activities are so deeply rooted in human nature that they are maintained with the least possible strain

A striking feature of many types of play is the element of make believe which is seen even in animals when they pretend to be fighting or hunting one another It may be explained as follows in conformity with the biological character of play Children have no preference for the world of fancy as such over the world of fact but the latter offers obstacles often irresistible to the activities in which their spontaneity tends naturally to express itself These obstacles can be circumvented only by making believe that conditions are different from what they actually are Hence the pretence that a chair upon the nursery floor is a ship afloat on perilous seas that the shrubbery is a forest inviting to romantic adventures, and so

on Upon this interpretation, the rôle of making believe should become gradually less important as the child acquires knowledge and the other means needed to deal with his environment as it truly is Observation shows that this is the case The young child may live in a world almost wholly fanciful the world of the Boy Scout contains much picturesque make-believe but is in the main the world of reality The principle is in all cases that the player introduces just so much of the make believe element as is needed to enable his activities to develop freely along the chosen path

T P N

PLETHYSMOGRAPH, THE —(See PSYCHOLOGY [EXPERIMENTAL])

PLINY Was born in A D 23 in North Italy and his Roman name was Caius Plinius Secundus He was a most laborious student and passed the greater part of his time in study In A D 79 he was in charge of the Roman fleet at Misenum when the eruption of Vesuvius occurred In his anxiety to examine more closely this famous phenomenon he sailed to Stabiae where he landed and perished a victim of the fumes emitted by the volcano Pliny wrote a number of books of which only one his Natural History has come down to us His nephew Pliny the younger left ten books of *Epistolae*

PLUTARCH (*c* A D 46–120) —He was born in Greece and educated at Athens under the academic philosopher Ammonius He spent most of his life quietly in his native place in Boeotia devoting himself to study giving public lectures performing various civil and religious duties and writing books His fame to day rests chiefly on his historical works to which belong his *Parallel Lives* a series of portraits of the great men of the ages preceding his own They were published in books each containing two lives—one Greek and one Roman—chosen on account of some resemblance between their respective careers Forty six of these Lives are extant and are of great literary value for the historical materials they contain concern matters of which all other records are lost Plutarch s professed purpose was to portray character rather than record great deeds and his *Lives* contain many apparently trifling incidents or sayings which illustrate features of character The lesser known half of Plutarch s writings known as *The Morals* include sixty treatises on Ethics Politics Philosophy etc Those on philosophy include such subjects as the unseen world the creation of the universe the human soul superstition brotherly love and divine justice and some breathe quite a Christian spirit

PNEUMOGRAPH, THE — (See PSYCHOLOGY [EXPERIMENTAL])

POETRY AS AN EDUCATIONAL SUBJECT — Education has in all ages and countries found one of her most potent aids and instruments perhaps her most potent alike in the letter and in the spirit of poetry

Nursery rhymes are the beginning of education Facts otherwise difficult to memorize are rendered easy of retention by being cast in a rhythmic form Many immemorial maxims are found conveyed in such a form in many languages Laws and oracles precepts of conduct, business and medicine, originally often took this shape Such rhythms are the beginnings of poetry, and sometimes poetry itself

No one who wishes to influence the mind of a nation could be indifferent to its poetry The saying of Fletcher of Saltoun "Let me make the ballads of a nation and I care not who makes its laws is well known and its truth is generally admitted Poetry reflects fixes and by representation and repetition confirms the otherwise fluctuating national tradition and habit This is no new discovery None knew it better than the Greeks When Plato in despair over the downfall military and moral of his loved Athens asked himself how he could alter its temperament and character the answer which he found was by altering its education What was this ? It was *music* for the soul *gymnastic* for the body *Music* for the Greeks meant roughly songs or hymns not songs without words nor words without melody but words to be sung often also to be danced or marched to The main staple of Greek education was Homer, "the Bible of the Greek race

The Romans followed the Greeks Roman literature as we know it was started in the schoolroom by a Greek schoolmaster who translated Homer to teach it to the Roman boy as he had taught the original to the Greek As the Romans acquired a body of poetry of their own this again passed into the schoolroom Virgil and Horace like Tennyson became lesson books in their own lifetime or but little after their death

Modern nations following the ancient, have used the Classic poets as they did first the Roman poets and then since the Renaissance the Greek also

A classical education is very largely an education in and by poetry Its effects are undoubted Its value has been indicated in eloquent pronouncements alike by Thomas and Matthew Arnold and by J H Newman But indeed it is written large in the history of modern as well as ancient nations Poetry is not merely a *memoria technica* or a lesson in language and grammar or even style nor again in observation it is a mental and moral inspiration

Gray s *Elegy* as a schoolmaster poet said annealed the heart of Wolfe for war ' 'Every great poet is a teacher ' cried Wordsworth, "I wish to be considered as a teacher or as nothing It is not then a question of whether poetry should be taught in all schools but of what poetry and how much and how and when it should be taught ?

This is the old question which confronted Plato The Greeks however learned in their schools no literature and no language but their own The Romans learned their own Latin and also Greek Our scholars learn both these and their own too A classical education is then an education partly in language partly in literature

Poetry in the Schoolroom It will be useful here, however to separate the two and deal only with poetry in the mother tongue this only being added, that wherever a language is taught the poetry of that language should form a substantial part of the teaching It is the merit of poetry that it is suited to all ages and stages of education, from even the infant mind with its instinctive sense of rhythm and suggestion to the student on the threshold of manhood or womanhood For school purposes, it is obvious that there must be a graded course

The best poetry of its kind is the best at all stages

The mother's "lullaby" to be found in all tongues is the starting point

Directly this is passed, and a commencement made upon real poetry certain principles emerge

The poems to be taught should be fine in spirit and beautiful in form They should be *musical* and also *picturesque* They should make appeal at once to the "inner eye" and the "inner ear" And they should be *interesting*

The canon in selecting poetry for the schoolroom, and more particularly for its younger classes is given by Milton's famous saying that poetry should be "simple sensuous (not of course sensual) and passionate Let these three elements be taken in order

First, the Simple Common sense and actual experience theory and practice alike rule that we should begin with the simple and easy, and end with the difficult begin with the nursery rhyme and the ballad and end with the philosophical poem begin with *The Death of Cock Robin* and end with *Paradise Lost* or *Hamlet* begin with *What does Little Birdie Say?* and end with *In Memoriam* begin with the *Pied Piper* and end with the *Ring and the Book*

This is the more important because the apparently simple is not always really so especially to a child A child does not expect to understand everything It takes a great deal for granted To a young child the "cabbalistic may suggest more than the defined Abracadabra more than 'a six sided figure

Second, the Sensuous The child really finds Milton's first quality in his second *simplicity* in *sensuousness* and *concreteness*

What the child likes and understands are distinct figures and things with clear names kings queens beasts birds flowers jewels snow oil distinct sounds scents tastes and the like and it is always prepared to be surprised with unknown beings and powers—beasts birds plants giants dwarfs fairies mermaids—for they are no more surprising than anything else it has not yet experienced

Third, the Passionate The child too loves in poetry Milton's third characteristic—the *passionate* those actions that is or sufferings which arouse interest and sympathy provided that they are not beyond the scope of childhood The same continues true with allowance for enlarged sympathies of older pupils In teaching by poetry then regard must be had both to the letter and the spirit It is of the essence of the best poetry that the two are like soul and body really inseparable But it should always be remembered that poetry which is the 'finer breath of knowledge teaches by *suggestion* rather than by exact statement that—

> "Words like Nature half reveal
> And half conceal, the Soul within"

Explanation then should be sparingly employed Let the poem make its own impression Much note and comment should not be offered, at first little or none except such as is given orally by the teacher

Learning by heart and reading by the pupil are far more important in school classes Even later second hand opinions and criticisms are of little value The student should be encouraged to be sincere in his likes and dislikes Let him be told that he is young and may change his opinion and that it is more likely he is wrong than the world and the ages but let his opinion be his own

It is just here that poetry is so potent for opinions are conveyed far more by suggestion than by demonstration Men are led more by the heart than the head The reason should be cultivated by other forms of education—by mathematics by logic, by history by science But the reason will often be used as the instrument of the passions the loves and the hates the ambitions and the sentiments It is for poetry, in its sphere to school these tyrants of the reason It should teach the true and high and noble loves of God and Nature of country and kin, of men and animals It should teach piety and loyalty courage and chivalry

Piety and religion are aided by "psalms and hymns and spiritual songs' Love of country, especially can be aided by nothing so much as by patriotic songs and poems and if any one is inclined to think such narrowing let him reflect that it is through the patriotic songs and music of other nations that we feel and realize their love of their country most

The *Speech of Henry V*, by Shakespeare, *Scots wha hae Marmion* the *Battle of the Baltic* the *Armada* the *Charge of the Light Brigade* the *Recessional* these appeal to the boy and the girl too

The English teacher has a special opportunity in the admitted wealth of English poetry No race, except the Greek has a comparable treasure-house of poetry of every kind from which to bring forth new and old As the Empire grows, the different Dominions will add—they have already begun—new poetry of their own to the pieces learned at their Mother's knee new poetry for their own children and lands And an Empire poetry common to all will also doubtless grow Its beginnings are even now to be seen

The Dramatic Element In dealing with dramatic poetry it is obvious that a certain amount of declamation and gesture may be employed with advantage and indeed not only dramatic reading or recitation but acting should form part of a complete poetical education So also should the kindred arts of marching and rhythmic drill and dancing go with poetry and song if these are to have their full educational effect

With the oldest pupils of school age it is useful to spend time on the lives of the poets and the circumstances under which special poems were produced The experiment may be made of reading to the pupil or encouraging the pupil to read some of Johnson's famous *Lives* or some chapters from the *Men of Letters* series An excellent opportunity of this kind is afforded by the *Annotated Edition of Tennyson's Poems* with the Life prefixed to it by his son the advantage being that the statements are matters of fact and the comments the poet's own and not the conjectures of commentators But most of such learning belongs rather to the university than the school stage of study

Teaching the Composition of Poetry Ought the art of poetry itself to be taught in schools? There can be little doubt that it ought It stands on the same ground as the other arts such as drawing and painting or singing and music The gift for versification is far more common than is generally recognized Why then are poets so few? It is like the gift for drawing It is possessed by thousands but only one in a thousand is an artist, one in many thousands a great artist

What is to be avoided is the attempt to force the pupil, and to expect drawing and painting from

those who have no eye or poetry and music from those who have no ear H W

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POGGIO BRACCIOLINI —(See RENAISSANCE THE)

POLE, CARDINAL —In the brief period of Roman Catholic reaction during the reign of Queen Mary I we find that by Articles (to which there was attached a letter dated March 1553) to the Bishop of London the strictest orthodoxy of schoolmasters and teachers was directed to be enforced Cardinal Pole advocated compulsory education and the establishment of public schools and would have used the abbeys for this purpose (see Dialogue between Lupset and Pole *Life and Letters* E E T S p 187) When Archbishop of Canterbury (1556–1558) he takes his place in the history of English education by virtue of Article 20 of the Articles set forth by him to be inquired into during his visitation of the diocese of Canterbury in 1557 Whether the common schools be well kept and that the schoolmasters be diligent in teaching and be also catholic and men of good and upright judgment and that they be examined and approved by the ordinary ' This Article shows a broad view of the educational necessities of the time and is worthy educationally of the great traditions of the Tudor Age J L G DE M

POLITICAL ECONOMY, THE BEST METHODS OF TEACHING —It may be said that at the present time there are three methods of economic teaching the descriptive the historical and the analytical Each of these methods represents the special interest or bias of a group of teachers who have approached the science of Political Economy through different courses of training The motive of descriptive study is the desire to obtain a working knowledge of existing problems and conditions of labour industry finance or commerce It does not desire to look far ahead but to collect and classify from time to time the social and industrial facts to present them in one view to enable knowledge to keep up with the constantly changing complex of actual life This method of study also enables conclusions as to immediate policy to be drawn trusting to a later description and classification to indicate the next step Government Reports are a good example of its use It is also the method of many private investigators who distrust general reasoning on human affairs and are sceptical as to the existence of any principles such as the " exact sciences endeavour to lay down as fixed and immutable throughout all change A great amount of economic research has been done by the use of this method Such knowledge is liable to go out of date soon, and to require constant replacement by fresh investigation Every student ought to be trained to carry out research of this kind It represents to a large extent the direct bearing of economic study on public policy and affairs

The Historical Method aims at showing how economic systems and institutions have changed especially under the influence of and in relation to, larger changes in national life The motive here is to prevent dogmatism in the statement of principles and in the application of principles to policies It requires that any attempt to lay down a law as regards for example, the tenure of land, shall test itself by reference to the great variety of tenures which have existed even in this country, and shall be able to show that in this variety there was no real exception to the law suggested While it seeks to prevent dogmatism in scientific study the historical method is especially concerned to show that economic policy is not a fixed thing but that the same nation may rightly practice different or opposite policies at different times according to its stage of development The Free Trade and Protectionist argument is a case of this Every student ought to perceive the meaning of historical evolution in regard to social life and industry and to be on his guard against finality of statement He should know enough history to prefer to speak of tendencies rather than of *laws* in the human sciences The study of the past should make him sensitive to the possibilities of economic change in the future But he should be taught to regard historical study as constructive not merely as critical of principles History is full of examples of legislation which was useless because it endeavoured to defeat economic forces Historical study is apt to be biased by too great a desire to destroy principle and this bias is quite as dangerous as abstract dogmatism on principles On both constructive and critical grounds some historical knowledge is an essential background for economic study

The Analytical Method A student must also have understood the analytical method of economic reasoning and be able to use its instruments Complexity of detail, existing or historical is very great and it is not valid to argue on sequences of events alone The power to reason deductively is essential to any scientific study at all The essentials for this are several in the case of economics In the first place a student ought to have a good knowledge of mathematics up to the ordinary use of the calculus Without a working knowledge of this he will be unable to speak with confidence as to his results The problem in economics is as a rule not only to know that one change will tend to bring another but also to know *how much* change of one kind will bring *how much* change of the other kind The language of exactness is mathematics This means the use of symbols and it may appear that, in such practical matters as economics deals with, symbolic reasoning is too remote and abstract and makes for purely " academic ' treatment It is, indeed, often claimed that scientific economic books should be written in a language which he who runs may read It is advisable to popularize knowledge, but science cannot be popularized, though its results can Any one who takes up a text book of physical science will find himself involved in most abstruse mathematical

calculations If he claimed that physical science must cease to be so academic and came out of the clouds the reply would be that to learn science one must take the trouble to understand scientific method It is the same with economics Without the use of exact reasoning, the place of science will be taken by organized gossip and *post hoc propter hoc* argument Economics stands so much closer to controversies on public and social affairs than do most other sciences that it is the more necessary to maintain the scientific standards and prevent economic thought from being pulled this way or that to serve the propagandist purposes of any school or party It is the purpose of science to give tools to the administrator and leave him to use them such tools can be made only in the furnace of exact thought A student s knowledge of mathematics should include statistical method and the principles of graphs

The Procedure of a Teacher The use of these methods by a teacher should be on some such plan as the following He must first *create an interest* in the subject such as will carry students through the more difficult part of the work For this purpose, the descriptive and historical methods should be employed in the first place This will also give a basis of fact and prevent the analytical study of tendencies from seeming too much in the air Many students take up economic study because of a desire to know more of, for example the social problem Such interests should be fostered or created by descriptive works like Mr Booth s *Life and Labour* or by historical study of the manor the gild and the trade union The introduction to economic study should be descriptive and historical and a good teacher can indicate where scientific problems are involved in the course of this introduction As economic science is not taught in the schools, students will all the more require a basis of fact before they proceed to analysis

This should be followed by statistical method which can be taught from official or unofficial reports and inquiries as well as from a text book The use of reports has the advantage that the subject matter is introduced to the student as well as the method Students should be taught to see statistical problems as a whole to know which are the right figures to ask for in order to discover a result, and to be warned against plunging into figures before they know what figures are of any value Before a figure is put on the board the method should be made clear They should be taught to tabulate to reduce to percentage to criticize their result against error in working out and to keep their working out until the result has been tested Then should come mathematical analysis of economic forces The essential point for economic science is the teaching of critical values that is the perception of turning points in economic change Modern economics requires this power to be specially trained since its basis is marginal values or limiting cases—the increase, that is, of demand, supply, or production up to a limit set by cost Great misconceptions as to economic teaching exist in the minds of people not familiar with this art of measurement Professor Fisher's small work on the Calculus has been specially written for economic students who should start this part of their work either with it, or with Cournot s *Principles*, which has been translated

The third step is to return to the descriptive facts The student is now equipped with a method for their interpretation He should read widely till he gets his grip He should summarize important books for himself since this is the best way to ensure that he has understood them He must learn, in writing, to use his knowledge of scientific analysis and method so as not to obtrude it And he should lose no chance of getting access to the laboratory of economic science the actual conditions of labour and industry He should go down pits and over mills attend meetings, follow published reports, and talk to those who are engaged in economic work Some part of the field will appeal specially to his interest as showing a chance of doing a piece of work on his own account The intensive study of a definite question submitted for criticism to a teacher and perhaps afterwards published prepares him to develop his training and turn it to use on his own initiative as a writer D H M

POLITICAL SCIENCE IN RELATION TO EDUCATION —All that can be attempted in the restricted space at command is first to define, as briefly and accurately as possible the scope and purpose of Political Science second, to show cause for its inclusion in any truly liberal scheme of higher studies and thirdly to discuss its relations to other subjects in the curriculum It is assumed throughout that the task of Education is not to endow men and women with a fugitive and cloistered culture, but to equip them for the arena where that immortal garland is to be run for, not without dust and heat

For general purposes Political Science may be described as concerned with the study of the nature structure and functions of the State and of its relations with (1) the individual citizen, (2) other associations and groups within Society, such as nations churches vocational or professional organizations (3) other States It follows from this definition (which suffers as all such definitions must, from excessive rigidity) that the method of approach must be threefold First, it is essential to study comparatively the structure and working of existing political institutions, in which term must be included not only Legislatures Executives and Judiciaries together with the customs and conventions which make their functioning possible, but also political parties and organizations This branch of the subject may be said to be concerned with the study of the *facts* of politics But these institutions and conventions have a past They have been developed from or have replaced, other institutions often of a very different character It is necessary, therefore, in the second place, to study the *history* of States and the evolution of political forms But the State must also be explained What function does it perform in Society ? What limits if any are to be set to its activities ? Why do men obey it ? These are questions which inevitably arise when political discussion goes deeper than the clash of personal or party ambitions The science must furnish, if not answers to them, at least a critical exploration of the subject This involves not only an appeal to experience, based on the analysis of the present and the study of the past already described, but also a survey of men's ideals of or theories about, political organization The third line of approach must therefore include the study of the history of political thought

Its Place in the Curriculum. The inclusion of

such a subject as Political Science in any rational scheme of higher education would seem to need but little justification Yet, in fact, the recognition of its right to such a place is still only very partial As a rule, when the subject appears in a scheme of studies, it is in the guise of a poor relation of Economics or Philosophy It is easy to see why this is so The pure humanist when he considers the matter at all is apt to confine his attention to the great literature of the City State and to relegate all later speculation to an inferior category The physical scientist is impatient because Politics cannot be reduced to a series of formulae capable of universal application, and dismisses it as meta physics masquerading under false colours The practical man, that dispenser of grants and endow ments is contemptuous of all mere theory and is usually possessed by a hazy notion that the French Revolution came to grief through theorists ' his answer to the demand for systematic instruction is— Politics cannot be taught from books you can learn to govern only by governing

It is possible to admit that there is truth in all these contentions and still to assert that Political Science has a right to its place in the sun The humanist must be gently told that wisdom did not descend into the grave with Plato the scientist must be firmly reminded that the sciences which can give us four square and mathematically correct generalizations are very few the practical man must be asked whether he would wish a doctor or a dentist to learn his art by practising all untrained upon the bodies of his patients and if not why the body politic should be exposed to such barbarous treatment This, surely is the real justification of the claim that Political Science puts forward To say that education aims at making good citizens is of course an error Its purpose is to develop complete human beings and to cultivate all sides of human faculty A great part of life is lived in spheres where the State does not enter and preparation for conduct there is a vital concern of any educational system that aims at something more than mere instruction Nevertheless citizen ship and its duties are of the first importance to the educationist he dare not omit them from his calculation For good citizenship does not come by instinct mere obedience to the law and prompt payment of taxes is not enough in a democracy and to Democracy the British Common wealth is now irrevocably committed That method of government or way of life if it is to be something more than an organized hypocrisy calls for the intelligent co operation of all citizens in the work of shaping social policy Good in tentions are not enough they must be controlled by knowledge fine thinking to borrow a phrase from Mr H G Wells must go hand in hand with ' love '

To provide such knowledge and to evoke such " fine thinking ' is the task of Political Science It strives to familiarize the student with the facts of government and administration to show him that those facts are the products of a long and toilsome product of evolution and, by a study of that process itself to discover the great secular forces which have moulded, and still mould the social life of man It studies the thought and ideals of the past not only because of their intrinsic merit but because past speculation is inextricably woven into the fabric of living thought It will scarcely be contested that, to the extent to which it fulfils these aspirations, Political Science is justified by its works It now remains only to discuss the practical methods by which those ends must be achieved

Its Relations to other Subjects. The teacher and the student of Political Science must enter into relations with workers in at least three other fields of study, *i e* History Economics and Psychology Here it is impossible to do more than give reasons for this opinion the *method* of securing this co operation must depend so much upon circumstances that generalization with regard to it would be valueless

Let us consider first the case of History for historical knowledge is the indispensable founda tion for serious work in Politics Why this is so will be apparent from the account of the method of the science given above History provides the data from which any valid theory of the evolution of political forms must be deduced it gives us knowledge without which most past political speculation is meaningless to the modern student For ideas are the product of social circumstances and no man can think save with the materials which his age provides Neither Plato nor Aristotle could conceive of a political organization which transcended the narrow boundaries of the City State the fact that Hobbes was the witness of two civil wars is the key to the Leviathan But the service that History renders does not end here It is to the political student what his laboratory is to the chemist Its records furnish him with the facts of innumerable experiments in social organization and show the reasons for their success or failure Here as in other matters knowledge of the past supplements individual observation

But Politics has services to render to History also There is always a danger lest the latter should lapse into mere antiquarianism and the question of the spot at which Caesar crossed the Thames come to obscure really vital matters Politics like the other social sciences sets a standard of values by which the fruits of historical research may be tested Again the actions of an age must always be studied in the light of the ideals of that age and if it be true that we cannot understand the *De Monarchia* and the *Defensor Pacis* unless we know the facts as to the rise and conflicts of the Empire and the Papacy it is equally true that the facts are incomprehensible without knowledge of the theories that those works explain Thus co-operation between History and Politics should be as intimate as it is vital

This is equally true of Psychology and Politics but it is a truth still insufficiently recognized Political thinkers of course have always been psychologists, but their psychology has too often been limited and empirical Now, they are more and more utilizing the results of specialists and, by so doing are transforming their own science Mr Wallas s *Human Nature in Politics* for instance is really a study in Applied Psychology From the other side the psychologists themselves are more and more attacking problems which are essentially political as the recent works of Pro fessors Maciver and McDougall show The same tendency is of course, apparent in Economics The time we may hope is not far distant when the study of Psychology will be considered a necessary preliminary to serious work on the social sciences The more we think of the State as an association, a will-organization, the more imperative

it is that we should seek aid from the science of will and purpose

The value of Economics to our study is so obvious that it needs but little explanation The problems of Politics are really problems of power its exercise and control, and as Mr J A Hobson has said, in the modern world power is realized more and more through property," *i e* through economic organization Without some understanding of the latter our problems are insolvable Such practical matters, too, as taxation and the regulation of industry are common ground for the two sciences

To sum up specific instruction in Political Science is both desirable and necessary in higher education and the organization of that instruction requires resort to the assistance of the allied sciences of History Psychology and Economics

S HERBERT

POLITICS —This word is generally used to refer to those activities or interests which concern administration and legislation and the purpose of these—justice and liberty The origin of the word is misleading since it is connected with the Greek πόλις a peculiar and unique form of organized society having only a slight resemblance to the modern State Because of this origin politics is sometimes thought to be identical with the whole of social life and the theory of politics with the whole of the theory of society Politics and political interests must however be distinguished from religion from art and culture and from economics As it now stands politics involves two chief issues (1) the internal structure and activities of the State and (2) the contact between States In both issues the perception of fact is obscured by inherited theories as to the nature of the State With respect to the internal structure of the State law and administration at present vary immensely so far as method is concerned in the different States In some political power is held by one man or a few in others by a considerable number In all the economic structure of society called Capitalism is maintained by political devices since the alternative appears to those with political power to be chaos The more elaborately organized States sometimes called democratic are guided in their *methods* of action by lawyers There has been however a tendency to change the *purpose* of State action and to correct by political means the evils of the inherited or natural " social segmentation With respect to the contact between States there is opposition on the one hand leading periodically to war and on the other hand an increasing tendency to act together Each State with a few exceptions has developed separately and the necessity for strong and single executive and legislative power (sovereignty) has led to the administrative frontiers appearing to be boundaries of civilization Economic contacts have made interests similar in different States and the whole human race is at present in political relationship Therefore States have recently tended to act together for common interests in issues (epidemic disease etc) which do not affect the traditional sentiments The relation between States and other forms of organization—sub-national national, and international—is not at present clear C D B

POLYGLOT BIBLE OF ALCALA —(See ALCALA, THE UNIVERSITY OF)

POLYTECHNICS, THE LONDON.— Polytechnic was the name of an institution (given up to popular and semi-scientific studies) that formed the nucleus of Quintin Hogg s Working Lads' Institute (1881) The name was afterwards applied to certain London institutions whose teaching was devoted mainly to furthering industry and science

The London Polytechnic Council (created 1894) regulated the appropriation of funds organized the teaching, arranged for the holding of examinations, and supervised work generally In 1904 it was dissolved and the London County Council became responsible The general aims are the same for all the polytechnics small differences being due to the special arrangements made to meet local needs All are provided with laboratories, lecture rooms studios gymnasia trade classes and the accommodation and material for domestic economy manual training and applied science At first, manual instruction was given pre eminence but by degrees, and as grants permitted literary subjects were included The London University extension scheme now provides courses of lectures and classes in literary subjects in most of the polytechnics Some have established junior continuation schools and have opened their workshops to day students The Northampton Institute Clerkenwell has an engineering course worked on the sandwich system Battersea Polytechnic has a training course for teachers of domestic economy Regent Street Polytechnic provides special study for engineering architecture and carriage building the South Western Polytechnic has a school of mechanical and electrical engineering and trains women teachers of physical exercises the Northern Polytechnic offers training for teachers of domestic economy, and has departments of commerce and of physics and chemistry Woolwich Polytechnic receives in the daytime engineering apprentices employed in the arsenal In all cases the schemes admit of such freedom that the governing bodies can open any classes and carry out any recreative experiment for which any need is felt

By certain statutes the University of London can include in its list of university schools all institutions able and willing to provide advanced education and any qualified professor employed in them is recognized as a teacher of the University This and the fact that students can take degrees have made the polytechnics a part of the teaching power of the University

The Polytechnics comprise the Battersea Polytechnic Birkbeck College Borough Road Polytechnic City of London College East London College Northampton Institute Northern Polytechnic Regent Street Polytechnic, South Western Polytechnic Woolwich Polytechnic Sir John Cass's Institute

The scheme was in the beginning financed by the charity of certain City companies, by sums obtained by local taxation, and by the small fees They now receive grants from the Board of Education and the London County Council Although once confined to students between the ages of 18 and 25 no age limit now exists (See also SOCIAL SIDE OF A POLYTECHNIC THE)

PONCE, PIERRE DE (1520–1584) —He is considered the first inventor of the art of instructing deaf-mutes He was a Spanish Benedictine, and undertook to teach a deaf mute Gaspard Burgos, who was unable, owing to his affliction, to enter

the brotherhood He discovered a method of teach ing Burgos to speak so that he could make his con fession Burgos afterwards became so clever that he composed several books Ponce taught many other deaf mutes so that they not only wrote but uttered words No record remains to show what method Ponce employed except that he traced letters and showed by his lips the pronunciation He was able to teach his pupils languages literature and sciences but left no writings about his methods

POOR LAW CHILDREN (ENGLAND AND WALES), EDUCATION OF —In no branch of poor law administration since its reform in 1834 has more progress been made than in the education and the training of the children who come under the con trol of boards of guardians At first because no system of national education worthy of the name then existed the schools for these children formed part of the workhouses The disadvantages of this however soon became apparent and in 1839 were described by Dr Kay as follows (1) The want of a sufficient number in each school to enable the teachers to establish a correct classification of the scholars (2) the interruption caused by the con stant admission and discharge of the children (3) the occasional association of them with the indoor paupers (4) their loss of self respect and (5) the difficulty of getting enough well qualified teachers for the salaries offered There were however a certain number of well managed large industrial schools and so Dr Kay estimating that 50 000 children would have to be provided for recom mended the combination of Unions into 100 separate districts in each of which a district school could be established thus removing all the children of school age from the workhouses Each school was to be managed by two or three of the most intelligent Guardians of the combined Unions But it was not until 1848 that the necessary legis lation (11 & 12 Vict c 32) was passed enabling the general provision of these schools And owing to the difficulty of getting boards of guardians to combine for the purpose only seven district schools with about 4 700 children in them had been estab lished before 1871 In the meantime the *separate* school for the children chargeable to a single Union had made its appearance of which there were twenty five at the same date with some 7 000 children The greatest change was brought about by the passing of the Education Act in 1870 while the boarding out system was introduced from Scot land about the same time It was not long before the Guardians saw the advantages financial and other of sending the children to the elementary schools or of boarding them out instead of keeping them always in the workhouse The table in the next column shows the striking effects of the change

The practical extinction of the workhouse school enabled the Local Government Board to forbid by its Institution Order of 1913 the keeping of any child over 3 years of age in any workhouse after 31st March 1915 Still it must not be supposed that the workhouse school in spite of its many drawbacks was so ineffective in practice as it appeared to be in theory Many of these schools were most admirably managed the teaching given in them quite excellent and the vast majority of the children educated in them did well in after life But the happiness of the child has to be considered and this is most difficult to ensure within the walls of an institution where all kinds of adults are dealt with as well

District Schools, Separate Schools, and Cottage Homes Of the district and separate schools (respect ively 6 and 34 in number) some are large and some quite small On 1st January 1915 the number of children in them varied from 900 (North Surrey) to 37 (Southampton) but there were only 8 schools with a less number than 100 the average number in the district schools being 570, and in the separate schools 274 Those arranged on the block system were very severely criticized by the Departmental Committee on Metropolitan Poor Law Schools in 1896 It was no doubt difficult to see any good points about a system which congregated at that time in one school (the South Metropolitan District) some 2 500 boys and girls but here again experi ence contradicted theory The children in this school received a sound education and industrial training and the reports on their after careers showed how few of them could be described as in

		Average for half year ending Lady Day 1871	On 1st Jan, 1915
1	In Workhouse Schools	about 27 800	304
2	In district schools	4 705	3 425
3	In separate schools	about 7 000	4 253
4	In grouped Cottage Homes	—	5 075
5	Boarded out within Unions	No return	9 658
6	beyond Unions	112	2 361
7	Attending Pub Elementary Schools[1]	No return	19 621
8	Receiving instruction in Infirmaries from specially appointed Officers	—	707
9	Receiving Industrial or Technical Instruction only	—	2 114
10	In Institutions (other than imbecile Asylums and Reformed Homes) belonging to the Managers of the Metropolitan Asylum District	—	1 874

any sense failures It is seldom now that one hears these schools attacked for they have many advan tages which other systems do not possess and since 1904 the educational and industrial training given in them has been under the supervision of the Board of Education

Some of these schools are arranged on the cot tage home plan the earliest example of which is the district school at Banstead Here the children are housed in small detached homes instead of in one or more large buildings the boys under the charge of one of the industrial trainers and his wife and the girls under that of a foster mother as matron This system is perhaps rather more expensive than the other but its supporters con tend that it is a great advantage for the children to enjoy something resembling the life of an ordinary family

One advantage of the Poor Law Schools is the excellent physical training given in them and the attention paid to dental and medical treatment

The "Exmouth" Reference must be made to the training ship *Exmouth* moored in the Thames estuary which is under the control of the Metro politan Asylums Board (a poor law authority) and where about 700 boys sent by different boards of guardians receive their education and training Two years ago the ship was supplemented by a sea going tender the *Exmouth II* accommodating seventy boys Over 70 per cent of the boys enter either the Royal Navy or the Mercantile Marine

[1] In 1871 children attended the National or village schools from 70 Unions and in 1915 children were sent to the Public Elementary Schools from 526 Unions.

Scattered Homes Another system of educating poor law children originated in Sheffield in 1893 and has much to recommend it It is that of isolated (or scattered) homes The children are placed to the number of ten to fifteen in small homes scattered about the Union (hence the name) each home being under the charge of a foster-mother and they attend the nearest public elementary school A very close approach to ordinary family life is thus secured, but owing to the difficulty of getting the right kind of foster mother the life of the children may be anything but happy and desirable Further they lose to a large extent the benefits of the physical training and public spirit engendered by combined games in the poor law schools

The system of boarding out children is of course the nearest approach which can be made to real family life but it is easy to see that unless very carefully supervised it may be open to the gravest abuses It can only be applied to the cases of orphan and deserted children and they can be boarded out either within or outside the area of the Union to which they are chargeable Boarding out committees must be established to look after the children and lady inspectors of the Local Government Board see that these committees perform their duties properly

Emigration The emigration of children to the Colonies is not very largely resorted to and so long as boards of guardians find so little difficulty in placing them out at home it is not likely to be In 1914 423 orphan and deserted children were emigrated to Canada and generally they do well Their emigration is effected almost entirely through agencies which have receiving and distributing homes in that country and there is a careful system of Government inspection

Considerable use is made of schools and institutions certified for children requiring special treatment, some 12 404 being now dealt with in this way

In so short an article I have found it impossible to do more than give a slight sketch of the progress made in the education and training of poor law children but I think I have shown it to be very great The figures show too that the very large majority of the children are now included in the general educational system of the country They have also in many ways advantages greater than those received by children attending school from ordinary homes W C

POOR LAW SCHOOLS —These are established for the maintenance and education of children chargeable to the rates They belong to the guardians of various unions and are inspected by the Board of Education The Poor Law Reform Act of 1834 first called attention to the necessity for improvement in the then existing provisions made for the upbringing of the children of the State and in 1837 the committee appointed to inquire into the working of the new poor law recommended that the Poor Law Commissioners be empowered with the consent of the guardians to combine parishes for the support and organization of district schools each to hold about 1 000 children At this time children were brought up side by side with adult paupers in the workhouse and Dr Kay (Sir J Kay Shuttleworth) and Mr Carlton Tufnell a poor law inspector urged that the influence of adult paupers was most baneful In 1844 the Poor Law Amendment Act was passed whereby certain disabilities to the establishment of districts were abolished but it was not until the trial of Druet in 1849, for manslaughter that a really serious move was made Unions used to farm out by hundreds to contractors children who had become permanently chargeable to poor law authorities Hence arose a deplorable state of things for the contractor supplied cheap food in starvation quantities and pocketed substantial gains Druet owned one of these establishments at Tooting and there 150 children had died in a few days of cholera chiefly through neglect After this disclosure the building of schools commenced but outside the Metropolis very few unions combined to build district schools some preferring their own separate school whilst the benefits of the "cottage home' system and 'scattered homes and the boarding out of children with foster parents of the working classes attracted much attention Poor law schools now may be classified as follows (1) District schools (2) block schools (3) cottage homes (4) scattered homes

The Education Act of 1870 permitting children to attend elementary schools led to more than half the children at the present time being educated in this manner

Success and Organization of the Schools The work and organization of these schools have always interested the Local Government Board and the guardians Mr J S Oxley the L G B inspector issues annually exhaustive and valuable statistics on the schools in the Metropolitan area A summary of his report for the year ending 31st March 1914 shows—

	District Schools (4)	Block Schools (7)	Cottage Homes (7)	Scattered Homes (5)
Average No in each	802	385	424	396
Cost per head per week (including interest on loans)	14/6	13/4	16/2	11/-

The issuing of these statistics was stopped during the war and in 1919 the functions and powers of the Local Government Board were transferred to the Ministry of Health

The chief adverse criticism of the 'barrack" school is that the upbringing is unnatural and that large aggregation of numbers tends to institutional stolidity whereas in "cottage and 'scattered homes' the children come directly under the influence of foster parents In large schools, however a highly trained staff is possible and the technical training given is especially beneficial Boys are trained to such handicrafts as carpentry, engineering baking shoemaking tailoring painting gardening and farming and girls to domestic work etc The demand for their services much exceeds the supply A great feature of poor law schools is the school band and many military bandsmen and bandmasters received their first instructions in these institutions Children are sent to the schools by the guardians and are usually admitted into receiving homes or intermediate schools until vacancies arise Here they first go

through a probation period of three weeks so as to prevent the introduction of infectious disease They can stay in the school until 16 years of age but most leave at 14 Guardians are empowered in pursuance of the Poor Law Acts of 1889 and 1899 to take control of children until they reach 18 should it be thought wise to separate them entirely from parental influence The after life of a poor law child compares very favourably with that of the ordinary child from an elementary school

J I I

POORE (RICHARD), BISHOP OF SALISBURY AND DURHAM —This eminent and saintly ecclesiastic (who became Bishop of Salisbury in 1217 and of Durham in 1228) is noteworthy from the educational point of view as introducing an educational method destined to become famous in the nineteenth century the monitorial method Education in his time was well organized in the See of Salisbury As early as c 1139 King Stephen had granted the Church of Odiham to the Chancellor of the diocese for the care of the schools (*Sarum charters* Rolls Ed p 8 *Memorials of S Osmund* Rolls Ed vol i p 192) In 1261 Scholars Vale Hospital was founded (*Sarum charters* pp 334-5) and this hospital and place of education for poor scholars was visited by the Dean and Chapter of Sarum in 1296 Bishop Poore about 1223 by section 102 (*de beneficiis magistris scholarum providendis*) of his Constitutions provided that a suitable benefice should be set apart for a clerical schoolmaster who freely instructed poor scholars in the faculty of grammar (*Sarum charters* p 161) thus following the usual course in the diocesan organization of education It was some years earlier (c 1217) that he introduced into his Constitutions a provision for monitorial teaching to the following effect

Sacerdotes pueros quoque convocent et unum vel duos instruant qui alios instruant in praedictis (see Spelman's *Concilia* vol ii p 137 *Capitulum continens expositionem Catholicae fidei*)

It is convenient to notice here that the monitorial system, which lack of teachers made necessary in an age when the demand for education had suddenly increased was recommended in the early sixteenth century by John Brinsley in his *Ludus Literarius* (1612) and was actually in use at the Guisborough School in 1561 and at Rivington Grammar School in 1656 (Foster Watson) It should also be noted that the Chevalier Paulet organized a monitorial school in Paris as early as 1790 before Dr Bell introduced his monitorial ideas from Madras into England and possibly adopted an ancient Hindoo method of sub dividing the labour of teaching The history of the subject from the days of Richard Poore or earlier onwards shows that a lack of teachers in any age and in any country when there is a demand for education leads to the employment of child or adolescent teachers

J L G DE M

PORSON, RICHARD (1759–1808) —A great Greek scholar born at Ruston in Norfolk and educated by the assistance of a patron at Eton 1774–1778 and at Trinity College Cambridge being elected a Fellow of Trinity in 1782 He contributed to *Maty's Review* his first critique being on Schutz's Æschylus and his finest on Brunck's Aristophanes He corresponded with David Ruhnken an aged scholar of Leyden and by his *Notae breves ad Toupii Emendationes in Suidam* (1790) obtained fame abroad as a scholar of the highest rank His *Letters to Archdeacon Travis on the Spurious Verse* 1 John v 7 (coll 1790) according to Gibbon "the most acute and accurate piece of criticism since the days of Bentley appeared in the *Gentleman's Magazine* In 1792 his Fellowship was no longer open to a layman and friends raised a fund to secure him an annuity After his death this money was the foundation of the Porson Prize at Cambridge In this year he was also appointed Regius Professor of Greek at Cambridge He edited the plays of Æschylus and four of Euripides the *Hecuba* the *Orestes* the *Phoenissae* and the *Medea* and collected the Harleian MS of the *Odyssey* for the Grenville *Homer* In 1806 he became librarian of the London Institution His main interest was in scholarships and his unwearied industry and accuracy influenced the classical work at Cambridge (See also CLASSICAL LEARNING AND CRITICISM)

PORT-ROYALISTS, THE —They are as we know them in history (*a*) a few men of the highest intellect and piety whose names reach the world at large in matters theological rather than educational and (*b*) a number of women nuns of a Cistercian convent near Versailles and later in Paris The convent was founded in 1204 and lived the usual uneventful life till the seventeenth century In 1609 the daughter of Antoine Arnauld was made abbess when but a girl and proved later one of the saints of the universal church (see Quick's *Educational Reformers* Chap XI) a woman of rare devotion power and energy The nuns increased in number under her rule and the premises became inconvenient and more or less unhealthy Transfer in great part was made to Paris while at the same time a few men made their home near the older convent relations and friends of the abbess or of nuns and associated with them in the same religious convictions Thus we have Port Royal des Champs and Port Royal de Paris for the nuns and Les Granges—near Port Royal des Champs—for the men The whole however were regarded as a joint community all were keen and devout and apparently of the stuff of which apostles and martyrs are made They had adopted the theological tenets of Jansen Bishop of Ypres the Jesuits were their deadly foes and in the end crushed them

The Little Schools From their religious sprang their educational zeal and here their great men appear Antoine Arnauld and Arnauld D'Andilly brothers of the abbess the three brothers de Saci—Lancelot Nicole and Pascal—her nephews Saint Cyran was the master-mind at first vehement and dynamic but he suffered long imprisonment under Richelieu and died in 1643 within a few months of his release on the death of the Cardinal From the same religious zeal sprang also in great measure their school system and method their small boarding schools and their principles and practice of discipline Their views were gloomy and ascetic but the consequent necessity of watchful care and complete control was all the greater The reaction against the Jesuits assisted the same conclusion very small boarding schools continuous presence of a wise learned and pious teacher and exclusion of all emulation and rivalry The Fall of Man had corrupted the race Sin was rooted in the soul and gathered strength from every temptation The best training and most constant attention were required

and must be concentrated on the individual The average parent is not wise or expert or good enough hence a *school*, under the man of special excellence —a rare growth to be chosen with extreme care Hence too a *boarding* school, and a *small* school with five or six pupils only So came about the "little schools Their life also was little they had a beginning about 1643 were fully at work between 1646 and 1656 with a highest record of some fifty pupils in all at any one time and ceased to exist in 1661

In subjects and method of instruction their influence has been far reaching They taught better than the Jesuits and all before them chiefly by better method The grammar-book in Latin as an introduction to the study of Latin— to the unknown through the unintelligible —was displaced the mother tongue was the vehicle of approach and manifold translations from the original brought ideas and a vocabulary and facility of expression Real attention was paid to subjects other than the classics geometry mathematics and modern languages Throughout there was an effort to make knowledge pass forward with the growth of mental faculty to teach rationally as well as with a "sweet reasonableness They gave little thought to the training of the body

The Jesuits were victorious but their victory was their defeat from which they have never recovered When we think of the Jesuits we think at once of the mighty Pascal and the *Provincial Letters* When we think of education and educational method— whether as practised by the Jesuits or by others— we think of the little schools with affectionate regard and admiration marvelling at the zeal and devotion as well as at the supreme ability of the Gentlemen of Port Royal and are grateful for their lead in the excellent way of modern languages literature and the mother tongue A E L

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QUICK R H *Essays on Educational Reformers*

PORTSMOUTH, ROYAL NAVAL WAR COLLEGE —(See NAVAL COLLEGES ROYAL)

PORTUGAL, EDUCATIONAL SYSTEM OF — The educational systems of Portugal may be considered under three main heads Primary Secondary and Superior

1 **Primary** This includes three sections divided according to the age of the children taught and the nature of the instruction given

(*a*) INFANT The children are from 4 to 6 years of age and the teachers are women The aim is to promote the development of the child s body and mind The teaching takes place chiefly in the open air and the child gradually learns its A B C to name home-objects the addition and subtraction of very small numbers drawing modelling etc The system is a modification of that of Froebel and the schools are called kindergartens (*jardim-escola*)

(*b*) ELEMENTARY This grade is compulsory The child entering it is 7 years old There are many subjects taught and at the end of three years there is an examination The child must know the simple operations of arithmetic, including the metric system handwriting the history and geography of Portugal drawing, some natural science agriculture singing, etc Physical exercises are considered very necessary and are done in the open air The rudiments of natural science consist of very elementary ideas about zoology and botany, human anatomy and physiology and physics and chemistry The child is 9 or 10 when he passes the examination and can begin the complementary course

(*c*) COMPLEMENTARY The subjects are the same as in the elementary stage, but a higher standard is attained An examination takes place in the year following entrance As a rule, he is then 10 or 11 years old

(*d*) HIGHER PRIMARY There is a fourth division, optional for those who are unable to proceed to a secondary school The age on entering is 12 and the full course takes three years when the final examination is taken Though still undergoing alteration this division has for its underlying idea the broadening of the primary field Besides the subjects already mentioned, the children are taught French English the elements of international history geography etc and they are prepared for elementary agricultural schools schools of art etc

Primary schools are scattered all over the country, and entrance is free to all The examination at the end of the primary complementary course is a sort of matriculation examination for the secondary schools

The teachers in primary institutions are as a rule women for the girls and men for the boys They must hold the diploma of the elementary normal schools

There are some teachers (*escolas moveis*) who go all over the country to teach reading and writing to analphabetic adults by the national method the so called *joas de Deus cartilha*

2 **Secondary Education** may be divided into general and technical—

(*a*) The GENERAL course is preparatory to the universities and higher technical colleges both commercial and industrial The schools are called lyceums and the course consists of two parts general and complementary The former takes five years—the first three forming the first period the other two the second

The subjects of the first period are as follows Portuguese French geography natural science mathematics and drawing with English or German extra in the last two years In some lyceums there are teachers for both these languages but more often only one is taught

The subjects of the second period are the same as in the last two years of the first period with Latin in addition At the end of each period an examination takes place

The COMPLEMENTARY part includes two distinct courses It marks the point of bifurcation, the branches being literary (*letras*) and scientific The former includes English or German Portuguese Latin geography history and philosophy The latter comprises geography mathematics zoology botany physics chemistry, and English or German

Thirty lyceums are spread over the country, including the Azores and Madeira The majority of them are named *central* which means that they are fully staffed and that all courses—both general and complementary—can be taught in them A few are called *national* and there one gets the general course only There are four lyceums at Lisbon two at Oporto and one in each other large town The lyceums of Lisbon and Oporto are all central There are only two lyceums for girls one at Lisbon and the other at Oporto

With regard to the buildings some in Lisbon, such as the Pedro Nunes and the Camoes lyceums, are well worth a visit The rooms are large and well

ventilated and there are huge gymnasiums as well as splendid grounds for tennis and football Physical exercises (Swedish) are compulsory and taught during the whole course as a rule three times a week Medical inspectors select the exercises according to the physique of the students and have control of their health and the general hygiene of the institution

In some lyceums there are special funds to provide school journeys to interesting places during the holidays

The teaching is mostly practical in the first five years more theory being introduced in the complementary courses Some of the laboratories are equipped with important apparatus and chemicals and in the case of zoology and botany if there is not a proper museum in the school the teachers arrange excursions to the zoological gardens and museum of the neighbourhood Practical dissection and the manipulation of simple microscopical slides are also practised

The training of the teacher depends on the subjects to be taught As a rule he is equipped with the B Sc or B L degree and has undergone a period of training in a higher normal school

(*b*) The PROFESSIONAL or TECHNICAL schools require the primary complementary examination as a condition of entrance and provide education for artisans clerks etc The education is of two kinds commercial and industrial

The former includes book keeping commercial arithmetic the elements of natural science Portuguese French geography and (in some schools) political economy and English

The industrial course prepares students for occupations such as motor driving smithing etc Drawing is one of the most important subjects taught but everything depends on the nature of the school and the local industries

The length of such courses varies a good deal The majority of the teachers are qualified with some kind of diploma

These schools are numerous in commercial and industrial centres They have been named in the same way as the lyceums In Lisbon for instance there is one called by the name of a foreign secretary of the eighteenth century the Marquis de Pombal

The ELEMENTARY NORMAL SCHOOLS are institutions which confer upon their students after four years attendance the diploma required to qualify for teaching in primary schools There are three normal schools—Lisbon Oporto and Coimbra The course is divided into a general part for both sexes and special parts for men and women separately

The first part consists speaking generally of English French Portuguese general literature history economics botany zoology physics chemistry music and sports It takes three official years to complete the course and there are several examinations to be passed

The special part for women follows the general course and consists of three months residence in a maternity home training in needlework etc the time occupied altogether being twelve months Men are obliged to undergo for the same time special military training and instruction in physical exercises such as swimming etc Candidates for admission to elementary normal schools must have the certificate of the primary complementary examination

3 **Higher Education** comprises higher studies carried on at the universities and higher technical colleges

There are three universities in Portugal the old university of Coimbra one at Lisbon and the third at Oporto The last two have been organized by the Republic

The old system of the Coimbra University has been modified so as to bring it into line with the others

The faculties at *Coimbra* are science arts laws and medicine Sub divisions may roughly be summarized thus Science into mathematics physics and chemistry botany and zoology (biology) arts into psychology, philology and history and geography Medicine has a school of pharmacy as an annexe The faculties of science and arts are connected very closely with the higher normal schools and have a staff specially organized for the preparation of secondary teachers It will be understood that the ancient faculty of theology has been abolished

The *University of Lisbon* has the following faculties Science arts economics and political science and medicine With the last named faculty are grouped the school of pharmacy as at Coimbra, and several ancillary institutions namely a School of Tropical Medicine and institutes of hygiene ophthalmology bacteriology and forensic medicine An agricultural institute and the veterinary college are independent of the university

The faculties of the *University of Oporto* are as follows Science medicine (and pharmacy) commerce and engineering the last was added in November 1915

There are very complete museums under the supervision of the various professors and many of the laboratories are quite up to date Students applying for admission to the faculty of science must have the certificate of the complementary course at the lyceum (science division) The courses take four years to complete and there are several examinations to pass for the degree of B Sc Candidates for secondary teaching having obtained this or the B L must then attend some of the classes at the higher normal school (Lisbon Coimbra) The faculty of arts is divided into three groups (1) Philology including Greek and Latin the Romance languages English and German (2) history geography and ethnology (3) philosophy Each of these groups requires four years study and there are some additional subjects belonging to the philology group which are not necessary for the degree but are considered desirable They are Sanskrit Hebrew and Arabic Students who pass the examinations in any of the above groups are entitled to the B L degree

The faculty of laws possesses several chairs namely those of Roman law civil law finance economics statistics and political science It takes five years to qualify for a degree

Students in the two last-named faculties are admitted with the certificate of the complementary secondary course (literary division)

The faculty of medicine provides a six years' course divided into twelve periods of six months each including during the first two years work under guidance of the faculty of science in chemistry physics zoology and botany At least five examinations have to be passed in these sciences as they are not organized by the medical faculty The curriculum in the different special branches is compulsory and the faculty is divided into several

institutes each dealing with the teaching of a certain subject The course in pharmacy takes four years

The Institute of Agriculture consists of seventeen different chairs and seven auxiliary courses Diplomas are issued in agriculture and in forestry There is a matriculation examination for admission botany agricultural physics chemistry mechanics agriculture forestry parasitology industrial science stock raising and farm management are studied The full course takes five years

The veterinary college is an independent institution in Lisbon with a course of five years

The certificate required for admission to the Institute of Agriculture the Veterinary College and the School of Pharmacy is the complementary secondary (science division)

The work in these institutions is mostly practical there are several scholarships and funds provided by the Government and private subscriptions to promote excursions etc

Degrees of bachelor and doctor are granted, provided some extra years are spent in professional or theoretical work the regulations being something like those in the United Kingdom

The Senate of the university is the governing body charged with the duty of looking after the general interests of the faculties It consists of the rector (president) appointed by the Government the vice rector the director of each faculty a professor elected by the staff of each faculty an old student the chief magistrate and representatives of the subscribers and it meets twice a month The senate is the great administrative body having legal authority to arrange syllabuses select professors etc The assistants in all the faculties are men qualified by a written thesis and several practical and theoretical examinations The universities are free and supported by the Government

There is one higher technical institute at Lisbon with courses in mining civil mechanical electrochemical and chemico industrial engineering It takes from four to five years to gain the full qualification in each of the above groups besides two or three years practice in manufactories workshops etc The engineering faculty of the University of Oporto has the same organization

The higher schools of commerce of Lisbon and Oporto prepare students for important commercial positions Both industrial and commercial colleges require the complementary secondary (science division) certificate

The fees of the secondary and higher institutions range from £3 to £16 per annum

Higher Education for Special Purposes There are military and naval colleges at Lisbon Candidates are partly qualified before entrance as they take some parts of the higher technical course or work under the guidance of the faculty of science according to military requirements Each course at the military college takes two years for artillery engineers cavalry infantry and commissariat and doctors undergo two months preparation for a commission in the Army Medical Corps

Instruction in art is given at Lisbon and Oporto and to some extent also at Coimbra The schools of art have sixteen chairs Three years of preparatory study are demanded as an introduction to each section The sections are architecture sculpture painting and engraving

The student must hold the higher primary certificate There is no entrance fee Two or three years training is necessary after having passed the last examination, and some private scholarships are offered to promote study abroad

Dramatic students are taught in a school staffed by theatrical and artistic instructors of both sexes

There are elementary schools of agriculture and pomiculture at Queluz Santarem etc of horticulture at Tabuaço, of pomiculture and viticulture at Braga and Pico etc They are all of great utility, as agriculture is one of the most important national industries

The course of preparation for the mercantile marine in the naval college lasts two years and involves over 400 days of navigation in steamers and sailing vessels in the open sea

It should be borne in mind that the systems of education in Portugal have been profoundly affected by the change from monarchical government to the Republic and are still undergoing modifications A H B

PORTUGUESE, THE TEACHING OF —The study of this interesting language is developing steadily owing chiefly to the constant expansion of our trade with Brazil The greatest difficulty in its study is the orthography which has been lacking uniformity so far and is still a matter of perplexity The Portuguese Ministry of Education appointed a Commission in 1911 for the adoption of a uniform system and this Commission has issued a well thought out and interesting report but Brazil has not acquiesced in it and in Portugal itself the decisions of the Commission do not seem to have been unanimously accepted Our opinion however is that gradually the whole of Portugal and eventually Brazil will adopt the new scheme But the indecision of Portuguese orthography need not discourage the student In the first place the whole question is quite secondary The language in effect is unchanged in its essentials—whether a word be written with a single or a double consonant secondly as happens in all undecided points the result is that the rival ways are not so sharp a contrast to each other that the adoption of the one or the other could wreck a well constructed sentence in Portuguese

The advantage of this language over others shows itself on the other hand in the conjugation of its verbs the irregularities of Portuguese verbs are few and can be classified into groups easily recognizable The verbs altogether irregular are very limited in number It might seem at first sight that the nasality of Portuguese vowels would mar the general ring of the language in conversation but students of Portuguese soon find out that this and other peculiarities in the mouth of a competent speaker acquire a quaint 'sabor —a special charm which makes this coquettish language very attractive and pleasant to the ear in the very originality of its characteristic sounds

Relation to Spanish A pitfall for students in Portuguese is the similarity of this language to Castilian or what is now called Spanish From the wreck of the Latin language in the Iberian Peninsula four dialects sprang the Castilian the Galician or Portuguese the Bable and the Catalan It follows that all four dialects coming from the same stock must necessarily bear a strong analogy to one another so much so that with little difficulty knowing the one we could understand the others for practical purposes

Consequently there is a natural inclination on

the part of the student to pay little attention to the many points of divergence between Modern Portuguese and Modern Spanish This tendency must be combated in the teaching of Portuguese, because if a person knowing Spanish with a little additional study may practically make himself understood in writing a letter or saying a few words in Portuguese it takes much more to be able to occupy competently the position of Portuguese correspondent or carry on creditably a conversation in the language

Therefore what is undoubtedly a facilitation at first for the student who has a good knowledge of Spanish soon becomes for him a source of difficulty —the difficulty of keeping the two languages separate Hence the necessity of keeping in close contact with good modern books of each language in order to have constantly before one the diverse idiomatic characteristics of Spanish and Portuguese Well-written Spanish and Portuguese translations of the same English article when compared with each other will be two entirely different documents notwithstanding the indisputable analogy due to the common origin of these sister tongues

C A I

POSITIVISM —Derived from the French word *positif* (sure certain) Positivism is a system based on the ascertained results of scientific investigation More particularly the term is used to designate the philosophic system of Auguste Comte (1798 1857) Almost at the beginning of the great development of Modern Science Francis Bacon had foreseen that Science must ultimately embrace all orders of phenomena and Descartes had recognized the need of synthesis Throughout the seventeenth and eighteenth centuries the scientific field was continually extending and new sciences were arising dealing not only with the inorganic world but with life and society On these results Comte founded his system From the scattered researches into social organization and development that had already been made he instituted the new science of Sociology— the name was his own—separating it from Biology defining its field and setting forth its methods Ultimately he further separated Ethic from Sociology This was the term of a process which it had taken many ages to accomplish Primitive Man could recognize no law in the varied aspects of his environment Knowing his own passions and their effects—effects apparently not differing in kind from the phenomena of the world around him— he attributed the latter to volitions like his own to the actions of fetiches or gods but eventually Man perceived that certain antecedents were followed by certain consequents and that the world was subject to invariable laws Between these two contrasted stages there arose a transitional method of explanation in which the supernatural agents were replaced by entities or personified abstractions —such as Nature The three stages were named by Comte Theological or Fictitious Metaphysical or Abstract, Scientific or Positive But while each order of investigation passed through these stages the scientific stage was not reached simultaneously in each While the attention of men was directed especially to that which most nearly concerned their happiness or vanity, as morality government and the healing of disease it was the most general and least complex orders of phenomena in which natural laws were first discovered and fictitious or metaphysical explanations were first discarded Thus Mathematics which deals with the most general qualities—number extension and motion—preceded Astronomy which in its turn preceded Physics which had made considerable advance before Chemistry became scientific Biology Sociology and Ethic were in turn, placed on a completely scientific basis still later These seven abstract sciences thus form a series (*cf* Bacon s *scala intellectus*) each of which depends on the development of the preceding differing as to the date at which they became truly scientific though ultimately all expanding simultaneously To these laws of intellectual development correspond other sociological laws (*e g* that of the successive stages of human activity)

Comte s synthesis did not—like many earlier explanations of the World and Man—profess to be perfect and unchangeable Founded on science, it must necessarily grow with scientific development Like science it is relative and not absolute thereby differing from the syntheses of Descartes and Herbert Spencer It does not attempt to explain the Universe as it exists in itself but only as it relates to Man Pascal had said The whole succession of men during the course of so many ages should be considered as one man ever living and constantly learning Comte recognized Humanity as an organism with its own laws of historical development an organism the parts of which became more and more closely bound together The thoughts and actions of each generation are governed by the particular stage of evolution which it has reached

Proposals in Regard to Education To this scientific synthesis there would correspond a reformed education in which science would be preponderant Comte proposed to divide the education of the young into three periods In the first lasting till about the age of 7 the main purpose should be the development of observation and activity It should be carried on in the home and at this time should be formed prepossessions and habits the rational basis of which would be explained later There should be no formal teaching—not even of reading and writing In the second period—from 7 to 14—the child would be taught reading and writing but education in this stage would be especially concerned with the study of art taught mainly by practice In the later years of the period the boy or girl would attain some knowledge of his own literature and of the languages of neighbouring countries Ideally the mother should still be the teacher but in practice schools free and open to all would be necessary

Though much of this now commonplace seemed a daring innovation in Comte s time it is the third period that supplies the most original part of his educational scheme From 14 to 21 the great mass of boys would be engaged in learning a trade or fitting themselves for some profession requiring special training but Comte hoped that in the future this practical work would be light enough to leave time and energy for a general course in all the abstract sciences Vico (1668–1744) had pointed out that the individual tended to reproduce in his life mental as well as physical the history of the race (*cf* Recapitulation in Biology) By observing the child valuable knowledge could be obtained about Primitive Man Herbart (1776–1841) and Comte accepting the same theory put it to a converse purpose and used the knowledge of human development as a guide to education

Scheme for Adolescent Education. Comte proposed that from 14 to 21 the boy following the ladder of the sciences should spend the first two years on Mathematics and Astronomy (120 and 40 lessons respectively) and then a year each on Physics Chemistry Biology Sociology and Ethic, with forty lessons a year Girls would follow the same course save that in the first two years they would have 80 instead of 160 lessons for fear of too great a strain on their health These courses should be given without fee in every important town or indeed in the centre of every district Those pupils whose intellectual energy was not exhausted by their industrial training and their scientific education might add some knowledge of the classics As courses in all the seven sciences would be given in all countries change of residence need not break the continuity of study Indeed Comte thought the institution of travelling apprenticeship might be revived and extended

This scheme is obviously open to two serious objections both of which were foreseen by its author first if the sciences were taught as they are at present the time allotted would be insufficient to obtain a real knowledge of them and secondly few boys engaged in preparing for the active work of life would have capacity or inclination for so formidable a task But the purpose of this education would not be to make scientific specialists but to give a general knowledge of the chief methods and results of science to establish a scientific outlook so that the needs of life and society should be faced in a scientific spirit with a due recognition of the possibilities of improving Man's lot and of the limitations to which it would be always necessary to submit The main object therefore would be to give a competent knowledge of the methods of each science—not only the analytic methods of the inorganic but the synthetic methods of the organic sciences in which the whole is something besides the sum of its parts Moreover the field of each science would be limited for the purpose of this educational course to what was necessary for the study of the succeeding sciences Further the sciences would not be taught by specialists but by men capable of teaching all the sciences in succession Those whose career was devoted to special investigations such as medicine or the application of chemistry to industrial purposes would not take part in this general teaching That Comte proposed to entrust to a great corporation which he named the philosophic priesthood This body which should have no exclusive privileges and which having an international organization would not be subservient to any one government or any one State would have as its main object the teaching of the sciences As to the second difficulty that of inducing any great numbers to avail themselves of the teaching freely offered he looked forward to a gradual improvement in industrial organization and social morality which would give the workers more leisure and wider aspirations, the reform in education and the reform in industry proceeding together and each aiding the other

The final aim of Positive education being to fit its disciples for the 'service of Humanity," it remains above all moral even when most intellectual Originally personal motives are stronger than altruistic but the latter are strengthened by social co-operation while the former are weakened by social pressure Science directly promotes unity among men by establishing a common belief resting on demonstration and by aiding common action Positive education sets itself to cultivate both social feelings and intellectual power, since for the service of Man we need both the will to serve and the knowledge that may enable us to serve usefully and to attain the desired ends

In a wider sense, Comte treated education as extending throughout life and he sketched the outline of two treatises on Morals—one theoretical 'instituting the knowledge of human nature" the other practical 'instituting the improvement of human nature the latter dealing with education through all the phases of life from infancy to old age This design he did not live to carry out

The Positivist Calendar There is however one educational work due to him which has attained considerable fame the *Positivist Calendar or Calendar of Great Men* a concrete view of Man's history during the great transition from the Theocracies to the Modern Revolution The germ of the idea is found among the Zoroastrians and later, in the Catholic Calendar but though among Comte's purposes was that of cultivating veneration for human worth and gratitude to the benefactors of mankind he was still more intent on making plain the continuity of human civilization and the historic filiation of its successive stages In the Calendar the year is divided into thirteen months each representing a phase in human development The phases are Theocratic Civilization Ancient Poetry Ancient Philosophy Ancient Science Military Civilization Catholicism Feudal Civilization, Modern Epic Poetry Modern Industry The Modern Drama Modern Philosophy Modern Statesmanship, Modern Science Each is named after its greatest exponent Thus the months devoted to Poetry—in which all forms of Art are honoured—are Homer Dante Shakespeare while over the months of Philosophy Aristotle and Descartes preside Every day has its representative name placed in the appropriate month in some cases with alternative names for Leap Year and with a chief name that of the seventh day presiding over each week—the whole illustrating in a concrete form the main lines of historical development in the West

Positivism it thus appears claims to be a continuation of the historic evolution not a revolt against the Past It honours each preceding phase as a necessary though transient stage in human progress In fact it was in Social Dynamics that Comte made his most valuable contribution to Sociology For this study he introduced the method of historic filiation or as J S Mill called it inverse deduction In this method a generalization is made inductively from the facts of history and then it is deduced by showing how the sequence of events was necessitated according to known laws of human nature Comte traced the continuous life of Humanity from the old Theocracies (Egyptian Jewish etc) through the intellectual advance due to Greece the development of law and government under Rome and through the Catholic Feudal period to the Revolutionary transition with its negative movement of destruction and its simultaneous but slower movement of construction in science and industry the basis of the Religion of Humanity, in which, in Comte's view, all the

earlier religions of mankind were fulfilled and completed S H S

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POST-GRADUATE —A term used in the United States universities to denote students who have taken a Bachelor's degree and are being prepared for the higher degree of Doctor The colleges prepare students for the lower degrees and a limited number of universities have also graduate schools under the same management but with a separate organization to carry students on to the doctor's degree in science or philosophy

POST-IMPRESSIONISM IN ART TEACHING — (See ART TEACHING AIMS AND IDEALS IN)

POUNDS, JOHN (1766–1839) —He was a shoe mender of Portsmouth and a gratuitous instructor of poor children An accident in his youth compelled him to give up his dockyard work and engage in shoe mending About the year 1819 he adopted his nephew whose feet were deformed He cured the deformity and educated the child From that time he sought out the poor and neglected children of Portsmouth coaxed them to his workshop and engaged in their education During his last years he generally had about forty children in his little room teaching them by oral methods and making use of handbills and ragged fragments of books as aids to reading He was kind pleasant and facetious to the very young and strict with the older and more turbulent He encouraged his pupils to attend Sunday schools procuring suitable Sunday clothing for them For the young he made playthings He never sought compensation for his labours and often provided food as well as teaching for the most destitute He died suddenly on New Year's Day 1839 to the great sorrow of his pupils and fellow townsmen

POWELL, FREDERICK YORK (1850–1904) — Regius Professor of Modern History at Oxford from 1894 to 1904 was a man whose influence in the intellectual world cannot be measured by his published work His extraordinary wealth of knowledge sound judgment wide sympathies and absolute sincerity left an ineffaceable mark on the Oxford of his day and these gifts he used continually for the help and inspiration of others

As he once wrote of a friend His character was greater than anything he did

He was the eldest child and only son of Frederick Powell merchant of Mincing Lane

He was educated at the Manor House Hastings at Rugby and Oxford there he entered as an unattached student but migrated to Christ Church at the end of his first year He obtained a First Class in Law and History (then combined) in 1874 two years after taking his degree he returned to the House as Lecturer on Law Thenceforth his work was in Oxford although he lived in London until the last two years of his life

In 1874 he married a widow, Florence Batten, they had one daughter Mariella

In 1869 he first met the great Icelandic scholar, Gudbraud Vigfusson whom he called his Master and whose labours on the *Sagas* he shared till Vigfusson's death in 1889 Their *Corpus Poeticum Boreale* was published in 1883 For thirty years of enthusiastic and ungrudging labour York Powell taught wrote and lectured in Oxford His hurried intonation and at times his too great wealth of material prevented him from being an ideal lecturer but he was a universal authority on historical and literary subjects and one to whom countless younger scholars owe the success of their first efforts

In 1894 he succeeded Froude as Regius Professor at Oxford there as professor a curator of the Taylorian Institution and above all as a delegate of the Clarendon Press he was an intellectual stimulus of the highest type

His numerous writings include a *History of England to the Death of Henry VII* published (1885) as a school history but containing much valuable and original material the outcome of long research

He was a strong Liberal and subscribed to no creed He was big dark and handsome with a rich voice and a ringing laugh

He died suddenly in his house Staverton Grange Oxford 8th May 1904 and was buried in Wolvercote Cemetery at his own wish without religious rites but his coffin was followed by a long procession of mourners H O B B

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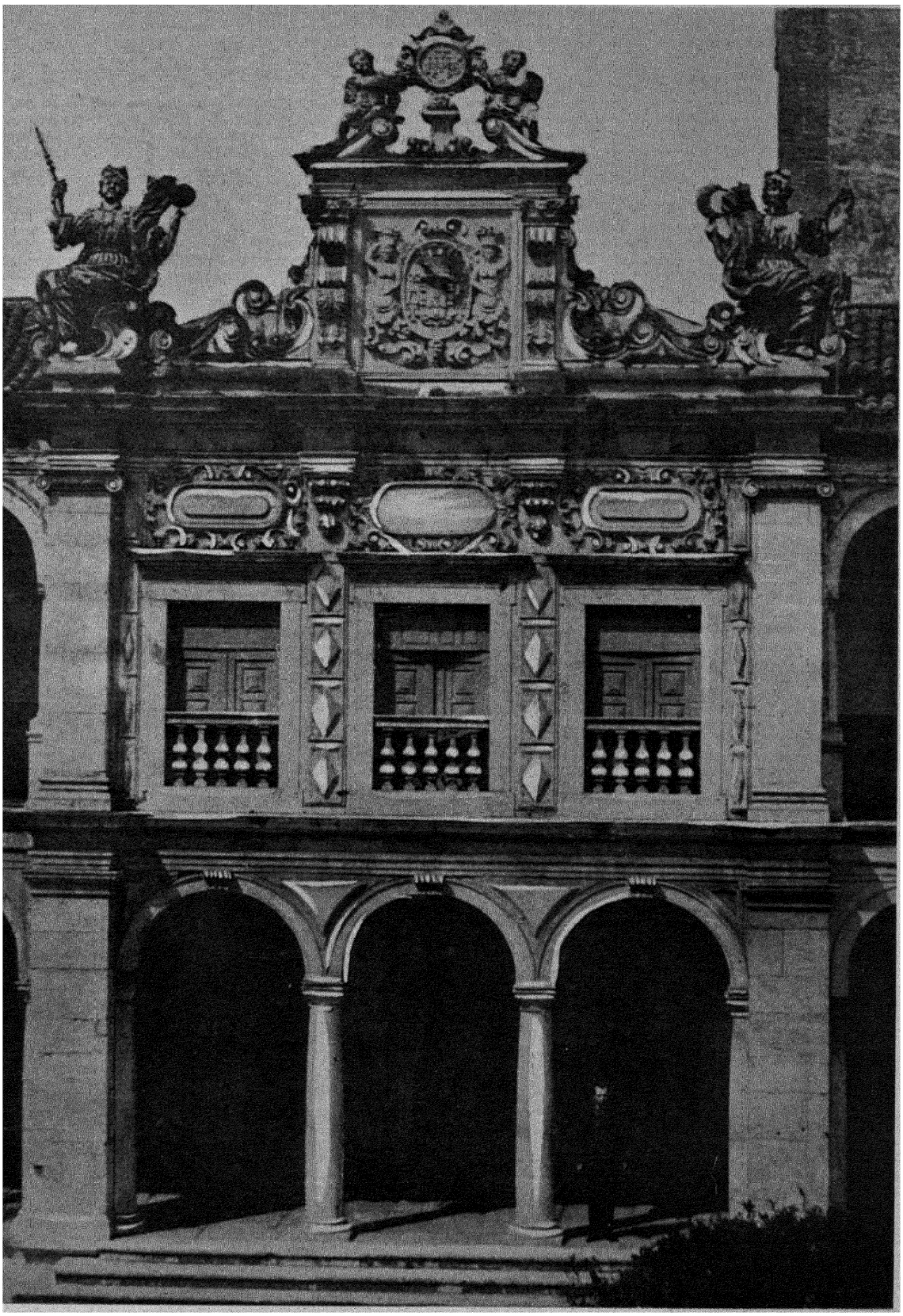
PRACTICAL GEOGRAPHY —(See GEOGRAPHY [PRACTICAL])

PRACTICE AND THEORY —(See THEORY AND PRACTICE)

PRACTISING SCHOOLS —These are schools used by training colleges for the purpose of giving their students definite systematic instruction under skilled supervision in the art of teaching The term is frequently used in a loose sense to include both the ordinary practising and the demonstration schools These types should be clearly differentiated for both are essential in training college work

Under the regulations of the Board of Education students must teach for continuous periods during their course of training In addition opportunities must be given to them for seeing expert teaching in the various subjects for studying questions of organization and discipline and for observing educational experiments in demonstration schools closely attached to the colleges The Regulations of 1909 enacted that every college should have a demonstration school and this is a condition of the recognition of any new college

Since the explicit object of a demonstration school is to exemplify in practice what the college advocates in theory, the two must work in close co operation and the college must exercise a very considerable amount of control over the school This ideal is frequently difficult to realize for since 1902 these schools formerly under the direct control of the principal of the college and the managers have passed under the jurisdiction of the local education authority Consequently the degree of college control depends on the attitude of this body and of the head teacher whose appointment is



The Façade of the former University of Evora Portugal
Now a famous school known as the Central Lyceum

ultimately confirmed by it, and the relationship is regulated by personal rather than by constitutional factors

The old model voluntary school attached to a college offered by the nature of its management and control full opportunity for demonstration purposes but in practice the many advantages accruing from this close contact with the college were largely discounted by the constant employment of the school for students teaching which prevented its fulfilling its real function Again through the use of one school only the practical experience of the students was necessarily limited both in variety and amount This difficulty has now been overcome by the allocation to the colleges for the purpose of ordinary practice of various types of schools Hence a greater freedom is preserved for the demonstration school proper whether it be non-provided or provided and set apart for the special purpose by the Education Committee A perfect system would provide for the complete liberty of the school to carry out the educational ideals of the college and would free it alike from undue intervention by the local authority and from the inevitable alienation from its true function which must result from its excessive use as a mere practising school S E S R

PRAGMATISM —Pragmatism is a philosophical doctrine which insists that as thinking is personal and purposive and is always influenced by emotion attention desire etc philosophical theories which ignore these facts and aim at establishing absolute truth error and reality are doomed to failure

Primarily it is a method of defining conceptions which consists in asking what practical effects a conception involves in the way of experience and action and in regarding these effects as constituting the conception This is the principle of Pierce who in 1879 first expounded the doctrine William James later in his *Psychology Will to Believe* and *Lectures on Pragmatism* used this method in attacking philosophical problems urging that in philosophical disputes it is necessary to inquire what practical effects are involved in the rival conceptions if there is no difference in these effects then the conceptions are identical and there is no ground for dispute

The application of this method by F C S Schiller and J Dewey to logic and ethics has led to the pragmatic or instrumental theory of truth—the theory that as all knowing is personal and of our own making—an instrument by which we adapt ourselves to new situations—the meaning of a conception will be dependent on its relation to ourselves and there can be no absolute truth On this view the laws of science are convenient generalizations which are subject to modification their truth is dependent on their adequacy in summarizing the facts

Schiller has given the name humanism to the application of the pragmatic method to all the sciences on account of its recognition of the part played by emotional and volitional factors in thinking S D

PRAISE AND BLAME —These are included among secondary rewards and punishments respectively Commendation expressed by look word or action gives pleasure to the pupil but must be judiciously distributed Praise should not be given without sufficient reason, nor withheld when deserved The tendency of late years to limit, or even to abolish prize-giving makes of more value words of praise which can be distributed to all members of a class from the cleverest down to the weakest dunce" Of censure Bain says "On the delicate handling of this instrument depend the highest refinements of moral control' Private remonstrance is a useful aid to a teacher random scolding does little good as it fails to reach the real offenders Both praise and blame should be used sparingly and justly

PRAYERS IN SCHOOLS —In most schools, attendance at some form of daily public prayer is compulsory with due provision for conscientious objections In secondary schools the particular form of public prayer to be used is usually enjoined in the scheme of government for the school

At Christ's Hospital founded in 1552 the religious obligation of public prayer is marked by the quaintly beautiful name of 'Duty

Private prayer has naturally been encouraged, side by side with public prayer and though in the early part of the last century it appears to have been not altogether easy at least for boys to use private prayer in open dormitories it is now probably the rule rather than the exception for all, boys and girls alike to use private prayer without hindrance from their fellow pupils

In the monastic system instruction in prayer formed a constituent part of education Pupils were given forms of prayer to learn by heart, and were taught how to pray This instruction has been to some extent continued in our schools of to day The Church of England Catechism for example which forms part of the regular religious instruction in many schools recognizes in a very marked manner the duty of learning how to pray It is doubtful however whether any large proportion of teachers recognize that this carries with it their own duty of teaching their pupils how to pray Such instruction should logically form a part of the general scheme for religious instruction If such a plan were regularly adopted it would naturally fall into two parts (1) Instruction as to the history and meaning of the forms of prayer used in public service (2) instruction as to the framing of private prayers

Private Prayer The first of these two is probably the practice in many schools the second is probably rare And yet it is surely needed, especially at the difficult time when pupils are passing or should be passing from the prayers of infancy to those of adult age Such instruction as may be given frequently takes the form of advice that "it does not matter what words they use provided the words come from the heart" Surely this is a grave error Prayer is a most difficult art The language which we use in prayer is of infinite importance for it is the language of the spirit of finite man speaking to the spirit of infinite God Such language does not come readily or without guidance 'We know not how to pray as we ought

It is suggested therefore that our scholars should be carefully instructed on the lines of the best models of prayer (*i e* those contained in the Bible and especially in parts of the *Psalms* in the ancient prayers of the Church most of which are enshrined in the Prayer Book and in such deeply spiritual books as the *Imitation of Christ* or the prayers of later masters of prayers) Such a system of teaching

in prayer would be progressive and suited to the ages of the learners As they grew older they would be taught the duty of self-training in prayer

Public Worship English people have happily not yet accepted the principle of so-called secular teaching and we may hope will never do so It is however open to consideration whether the almost universal system in our public schools of compulsory attendance at all public worship is altogether desirable—whether in fact it tends to produce in after years that habitual attendance which should be its main purpose Compulsory attendance is the easiest method to work but it is not therefore necessarily the best It is difficult also to reconcile the compulsory attendance of pupils with the non compulsory attendance of the teachers Lastly it may be doubted whether the forms which we largely use are not too long and too complicated and often unintelligible to the young A W U

PRECEPTORS, THE COLLEGE OF —The College of Preceptors was founded in 1846 and incorporated by royal charter on 28th March 1849 "for the purpose of promoting sound learning and of advancing the interests of Education especially among the middle classes It was empowered to undertake any work calculated to advance the cause of Education or the interests of the Scholastic Profession Beginning as an association of private school teachers it soon attracted the support of men and women engaged in teaching in public schools and it became and remained a union of secondary teachers

The College building in Bloomsbury Square is a centre for the activities of educational associations It contains rooms for the use of members and a library of educational works from which members may borrow There are periodical meetings of the members and series of social and educative meetings in the winter vacations

Outside its own walls the College takes an active share in important educational movements It has representatives on the Teachers Registration Council the Federation of Independent Schools and other associations of teachers and it took a prominent part in establishing and developing the joint agencies which do much to lighten the burden of agency fees for men and women seeking posts in schools

In order to encourage distinctive professional study an essential part of a teacher's equipment the College at the outset of its career established examinations of teachers granting to successful candidates the diplomas of Associate or Licentiate or Fellow of the College and requiring all candidates to show a knowledge of methods of education of the principles underlying those methods and of physiology and hygiene In 1871 it instituted annual series of lectures on the science and art of education which have been continued down to the present day From 1895 to 1898 it conducted a training college for teachers and it now contemplates a new development of its training work

In 1860 the College began to advocate the statutory registration of teachers From that time until the establishment of the Teachers' Registration Council the College made persistent efforts by promoting Bills in Parliament and in other ways to secure registration

In 1854 the College established local examinations of pupils These examinations are held in the United Kingdom and the Colonies and the certificates are accepted by a large number of professional and other bodies as a guarantee of sufficient general education for certain purposes The College has recently instituted an examination for certificates of proficiency in commercial subjects

Out of surplus funds the College has provided a benevolent fund for the relief of distressed members from which grants amounting to more than £2 500 have been paid The College holds in trust the Hopkins Benevolent Fund which provides annuities for 'poor gentlemen of the age of 60 or upwards whose lives have been devoted to teaching

The College while recognizing the improvement in material equipment effected through the administrative action of the central and local education authorities attaches importance to the freedom of the teacher in purely educational matters as a condition of progress Believing that private schools afford the most favourable field for educational experiment the College has endeavoured by means of conferences and by representations to the education authorities to preserve the educational freedom of efficient private schools It is at present engaged in efforts to secure for teachers the recognized right to take part in deciding the conditions under which their work is done and to obtain for teachers in independent schools the benefits of the School Teachers Superannuation Act W G R

PRÉCIS WRITING, HOW TO TEACH —A *précis* is a precise or abridged statement *precise* means definite exact just of the right measure Précis writing therefore demands exact thinking and precise expression Students must be inspired by the enthusiasm of the teacher to believe that persistent practice in summarizing will greatly increase their mental efficiency R L Stevenson wrote I have small idea of the degree of accuracy possible to man Remembering this and also that in its aim at essential accuracy the art is almost mathematical the teacher realizes its importance and difficulty Précis writing is not learned by listening to lectures and getting rules it is learned by doing and just as one cannot talk well about anything unless one understands it so one cannot summarize well unless one understands the subject Hence exercises should mainly proceed from the simple to the complex

Preliminary exercises should easily create a lively interest A child's first words are nouns then verbs —the elements of sentences The early exercises in précis writing should aim at reducing sentences to their simple elements by stripping off enlargements and extensions and stating the result *in simple grammatical form* Mere 'pointers —for example 'What cheques are —are useless the gist of the passage should be given making a definite assertion The temptation to summarize by mere notes or jerky simple sentences must be anticipated for smooth reading—though of secondary importance—students should join suitable sentences together

Examples of tautology verbosity and periphrasis should be furnished for reduction by omission of the vain repetitions Phrases (adjectival adverbial or noun) should be reduced to one or two words—"with a mechanical movement' (*mechanically*) Similarly clauses may be shortened to phrases or single words—'Men who are blest with healthy and vigorous constitutions (*Healthy and vigorous men*)

Exercises of about one hundred words to be condensed to about fifty, and then to twenty may now be given for advanced examinations, condensation to one-sixth or a less proportion may be desirable The hardest task is to select ideas *Mephistopheles* said On *words* let your attention centre" but *Student* replied Yet in the word must some idea be —and *Student* was right Ideas clothed in *any* fitting words must be judiciously selected and arranged, paraphrasing is not compulsory The teacher should elicit the ideas of a passage and put brief notes on the blackboard for free discussion and decision as to their relative importance

Longer and harder exercises may now be taken In working exercises important words should be underlined and marginal notes written rough drafts should be made then fair copies In certain exercises such as series of letters attention should be called to the beginnings and endings where valuable summaries are often given In indexing the index should begin with a descriptive present participle

In précis writing an exercise should be seen in broad outline the student should grasp facts keep to statements and ignore trifling ideas repetitions ornamental expressions and illustrations

V E C

PRECOCITY IN CHILDREN —By precocity in children we mean to indicate the manifestation of the child s mental functions at a period earlier than the one observed in the past and present generations of children In the course of his growth and development the individual unfolds his powers through acquisition of the stored up experiences of previous generations The well known biogenetic law may with some modifications be applied to mental life The development of the individual is an abbreviated reproduction of the evolution of the species Briefly put ontogenesis is an epitome of phylogenesis This biogenetic law holds true in the domain of education The stored up experiences of the race are condensed foreshortened recapitulated in the child s life history This process of progressive precocity or of foreshortening of education has been going on unconsciously in the course of human evolution We have now reached a stage when man can be made conscious of this fundamental process giving him control over his own growth and development

Although the process of foreshortening of education has been taking place throughout the history of mankind and especially of civilized humanity still the process has remained imperceptible on account of its extremely slow rate of progress Hence the fact of precocity or of early development of children has been hitherto regarded as rare as phenomenal Like all rare phenomena precocity or early child development is considered as unique as abnormal and even as pathological In fact many still regard precocity as some form of malady akin to mental alienation It is well however to bear in mind that phenomena at first scarce and rare may under favourable conditions become sufficiently numerous to be quite common We may lay it down as a law that all discoveries inventions and changes in general—economical political social mental moral and religious—first appear on a small scale in limited areas from which the changes spread in various directions Organisms start from small nuclei of growth species have their origin in small centres and restricted areas A new species may begin with some apparently insignificant variation which may grow and develop, and which from a certain standpoint may be regarded as an abnormality

What at present is considered as "precocity," and hence as an abnormality, may really be the foreshadowing of the future The apparently precocious may and will turn out a normal phenomenon

The stone which the builders refused is become the head stone of the corner" Early education, precocity is to become the corner stone of human life At present the preliminary period of child education is unduly retarded to the detriment of the individual and society

The Importance of Early Education. The truth is we do not realize the importance of early education We begin education late in the child's life, when dispositions have become formed and habits have become hardened This delay seriously injures the growth of the child by lowering the level of mental activity The critical points of formation of mental interests are allowed to slip by leaving the individual irresponsive to mental aesthetic and moral interests The critical turning points when the best energies can be brought out are not taken care of at the right moment of their appearance The mental functions become prematurely atrophied and degenerated When we attempt later on to awaken those functions we are surprised to find them absent We labour under the false impression that the child is naturally unapt and deficient To make up for the seeming deficiency we force the child s mind into narrow channels crippling and deforming it into mean mediocrity The child is run into the rigid forms of home school and college with the result of permanent mutilation of originality and genius The individual is deformed, because the critical spirit of inquiry and originality is racked on the Procrustes bed of home and school The unfortunate thing about it is the firm belief that the crippled spirit of the child is a congenital mediocrity Instead of shouldering the fault we put the burden on heredity Darwinism, with its spontaneous variation and hereditary transmission Germanic Mendelism accompanied by a widespread propaganda of Eugenics have blotted out from view the far more fundamental factors of environment and education which play such a paramount *rôle* in man s life

We may learn from recent studies in Psychopathology Investigations have shown the important *rôle* which early child experience plays in the patient s life Psychopathic affections can be traced to child experiences to shocks fears traumata which become afterwards reinforced by unfavourable conditions of life Psychopathology clearly brings out the significant fact that a good start in early childhood is of the utmost consequence to the individual Only a good education in early life can save man from the innumerable psychopathic maladies to which he is subject The seeds of vicious habits and of criminal tendencies can be eliminated in early childhood

Precocity as a Preventive. Early development or what is termed ' precocity " in children will not only prevent vice crime and disease but will strengthen the individual along all lines—physical, mental and moral Education should begin as early as possible varying from the second to the third year of childhood We should be careful not to cast the child s mind into ready-made moulds not to subject his individuality to the yoke of meaningless

mannerisms and rigid principles We should respect the child s personality We should remember that there is genius in every healthy normal child

We should not be scared by the bugbear of pre cocity We can awaken man s genius by giving the child an early education We should bear in mind the fact that the knowledge of our schoolboys and schoolgirls far surpasses that of the ancient sages or mediaeval doctors We should learn to under stand and utilize the process of progressive fore shortening of race acquisitions in the history of the individual

The reader is referred to *Philistine and Genius* by Boris Sidis M D published in the United States of America in 1911 in which the defects of the present system of training and the far reaching consequences of early education are pointed out

It may be of interest to add that it has been found by experience that children who have had the advantage of early education have developed a higher grade of intellectual and moral life a far better state of physical strength and health than children brought up under the present retarding system of education In order to gain access to the reserve energy of man we must have recourse to early child education to the much maligned and greatly feared precocity in children (See also WOTTON SIR HENRY) B SIDIS

PREFECT, MONITORIAL, AND PUPIL-TEACHER SYSTEMS, THE HISTORY OF—The earliest evidence of the prefect system is in the statutes of the House of the Scholars of Merton since called Merton College Oxford made in 1270 'And there shall be in each chamber one fellow more advanced than the rest in age and sense who shall have charge of the others in the matters before mentioned [viz attendance at chapel behaviour in hall at meals quiet and study in chambers and talking Latin] through whom the Warden and others put over them in such charge and the whole society if need be may clearly ascertain the progress of each of them in conduct and learning'

At Winchester College (founded in 1382 to feed New College) where the seventy scholars were housed in six chambers Rubric 34 ran In each chamber there shall be at least three scholars of good behaviour and more advanced than the rest in age discretion and learning to superintend their chamber fellows when studying and dili gently oversee them and when required truly certify and inform the Warden Sub warden and Head Master (*Magistrum Instructorem*) from time to time as occasion may require of their conduct and behaviour and progress in study They were it appears called Praepositors (*Praepositi*) more often than prefects in the sixteenth and seventeenth centuries and that term has been retained at Eton As far as the statutes go it would appear that the prefects were intended to be policemen rather than magistrates informers rather than governors and their duty was to report culprits for punish ment not as in later times, to inflict punishment themselves

Praepositors These praepositors or prefects also acted as pupil teachers

In 1443 the statutes of Eton reproduced the Winchester provision for prefects word for word In 1530 we get a picture of the system in operation sent by the head masters of Eton and Winchester to a newly founded school at Saffron Walden for guidance At Eton there were two praepositors in every form which "doth give in a schrowe the absents namys at any lecture' There were ij Praepositors in the body of the churche [the school chapel was also the parish church of Eton] ij in the qwere house prefects 'when they go home ij and ij in order a monitor to see that they do soe tyll they come at theire hostise dore Also Praepositors in feld when they play for fyghting rent clothes blew eyes or sich lyke Prepositors for yll kept hedys unwassh d facys fowle clothes and sich ether yff there be iij or v in a house monytors for chidyng and for Latyn speking' But from later sources we know that there too were two prefects of chapel a prefect of school a prefect of hall and a prefect of tub who had not to see that the juniors washed but that the broken meats from meals were duly placed in a tub in the hall and distributed to the poor Enough is left of the account in 1530 to show the prefects acting as pupil teachers The Vth forme learn the versyfycall rules of Sulpicius gevyn in ye mornyng of some of the VIth forme and this Vth forme gevyth rulys to the fowrth

In the statutes of Westminster School made by Queen Elizabeth in 1560 the Winchester and Eton system is copied There were only forty instead of seventy scholars boarded They were to be in two chambers with two praepositors in each or as actually happened one Long Chamber with four Praepositors who were in course for a week each They sung out *Surgite* at 5 a m and saw that they did not miss saying their prayers washed their faces and swept out the chamber There were four Prefects of school who in turn made out rolls of absentees and named those who were to lead the prayers

At Hertford in 1617 all scholars on the Master s syde shall speake Latin altogether and for the observaince thereof the master to take such course as is usuall in schooles by notes monitor or otherwise

At Rotherham in 1630 generalized for all schools by Charles Hoole in 1660 there was a prefect to see that on play days some boys who are apt to sneak home' did not while the master or usher should give lessons to every form in the morning or appoint a boy out of an upper form to do so

Eighteenth Century Developments In the eighteenth century the pupil teacher system seems to have disappeared except in college at Winchester and perhaps at Westminster The prefect system of government apart from tuition continued to prevail and grow at the public school At Win chester the prefects frequently entered into negotia tion with the warden on matters of school economy more especially holidays almost as if they were independent potentates The praepositors of Rugby (at least from the time of Dr James an Etonian [1778–1794] with a Wykehamist George Tunes as second master when it first became a great public school so far from being as often supposed the introduction of Dr Arnold in 1849) exercised the usual powers A senior monitor called names in church and marked absentees and form prae positors did the like What Arnold did was to bring his Winchester notions to Rugby in extend ing the power of praepositors and bringing them into more intimate relations with the head master as responsible for the boys good behaviour out of school A F L

PREFECT SYSTEM, THE —This would be ascribed by many to Dr Arnold of Rugby (*q v*) A few might be inclined to connect it with Joseph Lancaster (*q v*) because of his use of the term 'monitor All will agree that it is eminently characteristic of the English public school The system however is not merely characteristic of that institution but coeval with it In the statutes of Winchester College William of Wykeham (1324–1404) provided that, in each of the six lower chambers there shall be three scholars of good character and more mature discreet and learned than the rest to superintend their chamber fellows at their work and as often as there shall be cause or need under the obligation of their oath to the College when called upon truthfully to certify and inform the Warden Sub Warden and Schoolmaster concerning their behaviour conversation and progress in order that delinquent scholars may receive castigation correction and punishment adequate to their demerits There are still eighteen prefects at Winchester and there can be no reasonable doubt that from this charter of 1382 all school prefects monitors or prepostors do in a historical sense derive their authority It was contended by the late Mr Leach that as the still older ordinances of Merton College Oxford contain somewhat similar phrases the system must be dated further back and no doubt the position of the Regents who presided over dormitories of very youthful undergraduates in the mediaeval universities bore a certain resemblance to that of the senior prefect in a boarding house at a modern public school It is possible too that Wykeham had monastic precedents of some kind in his mind when he framed this statute But if we admit that the essence of the system lies in the confiding of power and responsibility to *schoolboys* the substantial originality of Wykeham's provision must also be conceded

The subsequent spread of the principle to the great schools founded after Winchester and to more recent institutions including the county and municipal secondary day schools can only be briefly traced When Henry VI founded Eton about 1440 he transferred hither practically the whole of the Winchester constitution and although there are now no prefects at Eton (there seem to have been monitors at one time) and prepostors only in a less important sense the position and privileges of the Sixth Form as well as of the Heads of Houses continue the same idea of self government among the boys The statutes of Westminster also copy the system from those of Winchester At Harrow monitors were perhaps first heard of in the headmastership of Archbishop Longley (1829–1836) himself an Eton man Bishop Welldon another Etonian Head Master of Harrow (1885–1898) somewhat increased their dignity but it was under Thomas Arnold the great Wykehamist Head Master of Rugby (1828–1842) that the prefect system attained its greatest reputation and through him that it has become the common property of all English public schools

Development of the System in Public Schools As it was the opinion (about 1895) of Edward Bowen of Harrow himself one of the ablest and most original of English schoolmasters that 'the Arnold system is now obsolete in the government of the School but it has been found possible to re-introduce it in the government of the House" it is worth while to consider exactly what this system was and of what modifications it has been found susceptible

Arnold was at first far from confident of the result "Sometimes he would be led to doubt whether the system were really compatible with the highest principles of education, sometimes he would seem to have an earnest and almost impatient desire to free himself from it Still, his resolve was to reform rather than to abolish and in this resolve he was characteristically strengthened by opposition He addressed the prepostors once or twice in every term and some of his phrases have been preserved such as 'Speaking to you as to young men who can enter into what I say I wish you all to feel sensible of the enormous influence you possess in ways in which we masters cannot for good or for evil on all below you' and "What we must look for here is first religious and moral principles secondly gentlemanly conduct, thirdly, intellectual ability It is no detraction from the greatness of Arnold to say that in the light of further experience and (it may be added) in the absence of his unique personality this attitude has been found open to criticism It is not in all ways desirable that schoolboys—even in the Sixth Form—should regard themselves as young men', to appoint them guardians of the religious principles of their schoolfellows is dangerously near asking them to be prigs and although remnants of a tutorial relation between the older and the younger pupils still exist in some schools it has long been an axiom that intellectual ability'—or rather attainment—is the concern of the masters rather than of the prefects Thus the latest developments of the prefect system in the great boarding schools aim nearly exclusively at the second of Arnold's *desiderata* viz gentlemanly conduct" and the Head of the House who is not necessarily even a member of the Sixth Form is a far more active agent than a school prefect or monitor or prepostor as such As might be expected this substitution of the house for the school as a self contained and self governing community has proceeded further in schools conducted almost entirely on the House system than in those organized (such as Marlborough Haileybury and Wellington) wholly or mainly on the Hostel System while prefectship has retained a singular vitality in the home of its origin Winchester

The influence of Pop (nominally a debating society) at Eton is an anomaly in form (like most Eton institutions) its members being elected by co optation but as 'it has a certain amount of official and an enormous unofficial authority in the School and 'there can be no doubt of the value of the existence of a small and powerful representative body to which the Head Master can make a quiet and unofficial appeal when the necessity arises (Clutton Brock) it must be classed under the general title of this article

In Day Schools The prefect system in day schools would be a large subject in itself if we attempted any account of local varieties of use and practice, but the underlying principles do not differ greatly from those which have been already indicated The element of "fagging" has little place in the day school The right of a prefect to inflict corporal punishment (subject of course to an appeal to the head master) is generally retained though not very frequently used The tutorial function has disappeared entirely or rather has branched off into something quite distinct viz, the employment (in

certain schools and for certain purposes) of pupil or student-teachers who are the modern representatives of Lancaster's "monitors" There remain besides a great variety of duties of an administrative kind which are of immense educational value —the far reaching Arnold principle that the prefects are responsible for "gentlemanly conduct" and his acute observation that they wield an enormous power in ways which the masters cannot upon those below them Self government said Thring of Uppingham "is the object a great school proposes to itself in its life and laws and the prepostors are the machinery for carrying out this self government amongst the boys themselves With out them the masters are despots and despotic laws must as far as they can do the work of sound internal popular government self worked and within the reach of all

The prefect system like other good things has had its abuses in the past and some of its modern developments are not without danger especially perhaps the danger of mistaking mere athletic prowess for strength of character a thing from which that is as distinct as any form of mere book learning can be but the system has been a reforming and formative element in English education for many generations and has exhibited an adaptability to changing circumstances which may be accepted as a proof of vitality and psychological truth Those who deny its merits must be prepared to condemn what is best as well as what is defective in the spirit of the English public school

R C G

PREFECT SYSTEM IN ELEMENTARY SCHOOLS, THE —The prefect system in public and secondary schools is an accepted part of English education Into elementary schools it has except in a handful of cases found its way only in very recent years The reason is not far to seek Outside the family we have been very ignorant of child life and we thought it extravagant to expect from children of elementary school age the self restraint and judgment and power to rule that self government demands Besides the idea was alien to the mechanical and uninspired principles that ruled our school system up to the end of the last century The Boy Scout movement came as a revelation it showed the powers of character latent in young children it proved that boys even of 12 or 13 can organize and command and obey The elementary prefect system has sprung directly from that movement It assumes that in the school as in the Scout Brigade boys (and not only boys but girls no less) when placed in a position of responsibility can rise to it when trusted will justify the trust can rule with common sense and a single eye for the common good can administer with scrupulous fairness, can become zealots for discipline can assimilate or propagate ideals which had been meaningless and irksome when imposed from above but which become a faith when they are its apostles It assumes, too that the collective boy and girl when free to choose who shall rule them choose not the specious and flashy but the solid and sensible and reliable

The system it is true is still very young but it has lived long enough already to prove how founded those assumptions were It has changed the whole atmosphere of some of our schools Very rarely are the wrong prefects chosen and, in fact the elementary system has a strength that it does not possess in secondary schools where the head master chooses the prefect and—knowing necessarily less of his boys than they know of one another—often makes mistakes Again and again the children have picked out what in the teacher's eyes was bad material but they knew better than he and the seemingly unpromising have made the best prefects For those who become prefects there is no finer school for life It draws out what is best in them—the child's innate wish to do what is right his sense of fairness his instinct to protect those weaker than himself—wishes and instincts that only need a favouring soil to stimulate them into growth No one who has been present at a Prefect's Court can help being struck with the wonderful maturity of its proceedings—the firmness of the senior prefect in the chair the brevity and pointedness of the discussions the scrupulous anxiety to be unfair to nobody the keenness for the honour and good order of the school So completely have some head teachers learnt to rely on this that in one of the best disciplined schools I know no child is caned except on the recommendation of the prefects It is no small thing that hundreds of children of the lower middle and working classes leave school every year with this practical training in the ethics of citizenship with their strength of character and reasonableness and thoughtfulness already developed by it It is notable that from one school every prefect who enlisted in the war rose to N C rank In years to come it may be the necessary apprenticeship of a Labour Member

Effects of the System on the School and on the Community What the system does for the prefects themselves it does in a less degree for all the children It at once gives the school its *esprit de corps* the lack of which has perhaps been the strongest mark of difference from public and grammar schools Of course it still lacks the deep roots that only tradition can give but elementary boys and girls become proud of their school as they never were before glad to contribute to its honour slow to bring it into any disgrace It is equally important that the children come to see the value of discipline Discipline is no longer an alien thing imposed on them and therefore to be resisted or suspected by all healthy boys or girls it now comes from themselves and is exercised by their own appointed leaders who because they know everything that goes on in the school do not make the mistakes that the best meaning of teachers will make The children readily submit to what they know to be just Hence there is a new order in the school There are no corners hidden from the prefect's eye no sly bullying or indecency escapes them as it may escape the teacher A class left without its teacher in the prefect's charge finds that his little finger is thicker than the master's loins This new orderliness is even more apparent outside the school premises A teacher cannot patrol the streets and roads the prefects do it effectively It is not only in the small matters of the law—opening gates climbing behind carts chalking walls and the manifold forms of illicit amusement dear to the small boy, repression of these is apt to go too far The important thing is that a new code of honour is formed The change of behaviour in rough towns and villages is extraordinary There is less horseplay less bad language street treasure trove is taken to the police women and the old are chivalrously treated, there is no guerilla warfare against shopkeepers In one such town the head master was

publicly thanked for the revolution in the manners of the children

It is indeed, a small revolution that the prefect system is effecting We have all—even those of us who know most of the schools—been disappointed that the moral result of our national education has been no greater But we have been attempting the impossible because that moral advance cannot come from the teachers alone It is only when it passes into the hands of the children themselves that it can really be effective It is this that the prefect system is doing and the results on the national character may be incalculable B K

PREMISES, SCHOOL —We have gone very far since an early edition of the National Society s *General Observations on the Construction of School rooms etc* It was therein stated that a barn furnishes no bad model and a good one may be easily converted into a schoolroom (Quoted by Wyatt *Companion to the Education Acts* 1870–1902 p 239) The Board of Education give a very different standard in their Building Regulations ' Their approval is required to plans drawn in accordance therewith The premises must be healthy safe in case of fire must have suitable and sufficient sanitary and cloakroom accommodation for the scholars in attendance and for teachers must be adequately lighted warmed ventilated cleaned and drained must be kept in proper repair and must be sufficient convenient and suitably arranged for the instruction of the children in attendance according to their age As regards existing buildings however the Board s Regulations admittedly do not constitute a standard by which existing premises can be judged and they are plainly unsuitable for any rigid application to proposals for enlarging or otherwise improving existing buildings Such cases must be dealt with individually as they arise having reasonable regard to the principles set forth The Board now think that from five to six hundred is the greatest number of scholars for whom provision can wisely be made in one and the same department that for large departments the most suitable plan is that of a central hall with the classrooms grouped round it and that where the site is sufficiently large open, and fairly level the most economical plan is that in which all the rooms are on the ground floor and this arrangement is preferable on educational grounds Where there is no central hall there should be a wide corridor giving access to the rooms The accommodation of the school must show an average of not less than 10 sq ft of floor space per head for older scholars and 9 per head for infants and this exclusive of any corridor or central hall or—in the case of a school for older scholars—classroom specially set apart for cookery laundrywork handicraft drawing or science Excellent rules and elaborate in detail are given in relation to lighting warming and ventilation sanitary arrangements water supply sites and playgrounds walls floors and roofs entrances staircases cloakrooms and lavatories

Secondary Schools These were first inspected by the Board of Education in the autumn of 1900 this by invitation of the particular schools and not as a system All that receive the Board's grant must now conform to the Board s rules and their ' Building Regulations are drawn up with full regard to the same principles and in the same detail as the corresponding Regulations for Elementary Schools The instruction however, is more advanced and the children of older years and as a rule comparatively heavy fees are charged At once we find the standard of accommodation to be different classrooms at the rate of four for every 100 scholars and none to hold more than 30 or less than 15 According to the size of a class a floor area of 17 to 18 sq ft per head is required In cases of difficulty and under particular arrangement of desks 16 sq ft will be accepted Proper dining halls should be provided for day scholars as well as for boarders and a generous provision of special rooms and equipment for special subjects of instruction is expected As with elementary schools plans must be submitted to the Board

Technical Schools, etc The same control—and on the same principles—is exercised by the Board of Education over evening schools and classes of sorts schools of art technical schools and other Forms of Provision of Further Education ' The premises as we may expect, " must be sanitary, convenient for teaching purposes adapted to the circumstances of the school and provided " with proper equipment Plans of site and buildings of any new school or of enlargements or alterations of existing schools must be submitted for the Board's approval

Training Colleges (See *Regulations for the Training of Teachers for Elementary Schools*) The premises and equipment must be approved by the Board Including other provision there must be common rooms or recreation rooms and a suitable library There must be facilities for physical training and ' provision should also be made for playing fields suitable for the practice of organized games In the case of existing premises proposed for training college purposes a satisfactory certificate is required from a professional sanitary engineer Substantial grants are given in aid of the establishment of training colleges and hostels

Sites In reference to sites for schools and for the purpose of removing difficulties in the grant and conveyance of land there are the several School Sites Acts of 1836 1841 1844 1849 and 1851 Their powers are incorporated in the Elementary Education Act of 1870 Under the Education Act of 1918 and consequent regulations of the Board local authorities may exercise powers of compulsory purchase of land

Loans. When the Board of Education have approved of the plans for educational purposes the Local Government Board must be approached for sanction to any necessary loan ' Questions in regard to water supply or drainage will be dealt with by the Local Government Board ' [" Appendix to Building Regulations ' (Board of Education)] and in the case of all applications they must be informed of (i) the assessable value of the area, (ii) the outstanding balance of other education loans and (iii) the unused borrowing powers for education purposes The powers of the Local Government Board are now transferred to the new Ministry of Health (1st July 1919)

Rating of Premises Voluntary (*i e* non provided schools) are exempt from payment of rates The old Board schools were not exempt neither are the new council or provided schools But the assessment is by no means uniform either in basis or amount sometimes it would appear to be arbitrary, but often based on the accommodation of school places

Erection of Schools. This was suspended during the war the country could not afford it—either in time or labour or material or money During the last year or two something has been done in the way of *temporary* buildings and the Board of Education have encouraged local authorities to make use of huts and hutments no longer required by the War Office the Ministry of Munitions or other Government departments and consequently at the disposal of the Ministry of Reconstruction during the period following on the conclusion of peace These have not been very satisfactory new buildings can be erected as a rule at a cost very little if at all above the expenditure involved in the taking down taking away and putting up again of fabric never intended for schools and naturally defective in important particulars when considered from the standpoint of school architecture

A compromise is found in *semi permanent* fabric —something of the solidity and durability of stone and brick and of the cheapness and adaptability of wood and corrugated iron and asbestos A timber framed and weather boarded building on brick or stone foundations can be reasonably sound and lasting good enough to satisfy the Ministry of Health for purposes of a loan on capital account for a substantial period and excellent as a school The cost is from 25 per cent to 50 per cent less than the usual permanent fabric dependent on many technical considerations and in particular on the kind and quality of material

Cost of School Buildings In later years before the war the cost of an elementary school was from £12 to £15 for each unit of accommodation of a secondary school from £35 to perhaps £60 for each such unit The figures now and for permanent fabric are possibly £50 to £60 and £160 respectively but there is practically no building

Building Grants These are of historical interest none (except to training colleges) are now given from the Imperial exchequer The first State aid to elementary education was for buildings a vote of £20 000 in 1833 Something under two millions was paid in total up to 1870 for denominational school purposes The Elementary Education Act of that year brought such grants to an end

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The Building Regulations being principles to be observed in planning and fitting up new buildings for Public Elementary Schools together with Rules as to construction and certain requirements as to plans

Building Regulations for Secondary Schools and Pupil teacher Centres

These from H M Stationery Office, Kingsway, London W C 2

PREPARATION OF LESSONS, THE —An article on this subject must necessarily be general in its character and definite information must be sought for under specific subjects There are however certain main principles which may guide the teacher in preparing a lesson His chief consideration must be the effect upon the child for the selection and treatment of material can only be determined with due regard to the age and previous knowledge of the class The importance of accurate knowledge on the part of the teacher cannot be too strongly emphasized and the use of school text books as the only source of information is to be deprecated A bibliography formed by the teacher as a result of his practical experience is of great value

The importance of a careful consideration of teaching method depends on the well established belief that intellectually and morally the mind of the child is influenced by the manner of acquiring knowledge no less than by the knowledge itself Although the form of any lesson must be decided by its own particular bearing certain considerations are of permanent value

A set form is always liable to become stereotyped and mechanical in application but outline notes have their use and should follow a definite scheme while each lesson or sequence of lessons should be planned with a clear purpose The teacher must within possible limits ascertain what the class already knows and so build on that foundation for a most important aim in all instruction both moral and intellectual is to unify knowledge and to lead the pupils to see order and connection in apparently disjointed facts The realization of great general laws and ideas must be the ultimate goal of every learner Hence the teacher sets before himself a definite end in every lesson or series of lessons which he will test when he reaches the conclusion and in his preparation he must exercise his imagination to the extent of realizing not only his subject matter but the capacities and the difficulties of his class

The main divisions of a lesson may be regarded as three the introduction the presentation of the new matter and the conclusion

The purpose of the introductory stage is to prepare the children's minds by giving them some indication of the scope of the lesson by gathering up the threads of their previous knowledge and by emphasizing certain points and aspects necessary to the particular lesson

The methods of the stage of presentation are various and are determined by the subject and the class Some lessons consist entirely of oral exposition by the teacher and in these the main problem is the selection and arrangement of the matter in due sequence Their success depends on clear presentation and on a good command of language Story and descriptive lessons in literature history or geography illustrate this type

Where the general idea is of a more precise and definite type as in mathematical scientific or certain language lessons the more exact methods of induction and deduction can be employed The ultimate aim of both these methods is the same for the goal of each is the general idea and the essential difference between them is one of procedure In school work both are largely employed neither of them exclusively for they involve one another

The methods may be briefly explained In induction the method largely used in presenting new matter to a class the stages are the collection and treatment of material involving both observation and experiment the formulation of the general idea expressed as far as is practicable by the class itself and the application of the general idea to the particular case as a test of its validity a process which in itself is deductive

The general idea may be of various types such as a definition a classification a general law Illustrations of these types may be found in science lessons in the modern scientific treatment of grammar in the method by which the child is led to discover the new process in arithmetic or any branch of mathematics

In deduction the method of procedure is to pass

from the general idea to its application to the particular case, as for instance in the solution of an arithmetical problem through some process already made familiar to the class by induction or an exercise in composition involving some special grammatical rule or the application of a natural law to the explanation of some common phenomenon

In both the inductive and the deductive processes the final stage of the lesson will test the validity of the general idea and in any lesson or series of lessons the stage of revision should involve in addition to mere recapitulation the application of the new knowledge or aptitude Hence no less careful thought must be given to this stage than to that of the presentation of the new matter

Apart from the consideration of the general structure of a lesson the intelligent anticipation of detail is all important the use of the blackboard whether for incidental work or as an integral part of the lesson the choice of illustrations the form of questions—are all matters for careful consideration in preparation which very largely contribute to its success S E S R

PREPARATION OF WORK —(See HOMEWORK)

PREPARATORY SCHOOLS —According to the official definition given in the Rules of the Association of Preparatory Schools the word Preparatory applies only to schools which prepare boys for the schools represented at the Head Masters Conference and for the Royal Navy and contain no boys over 15 years of age When this definition was framed H M S *Britannia* was still in being and 15½ was the age limit for admission to the Royal Navy The Selborne reforms of 1902 changed all that At the present time successful candidates for the R N College Osborne join at 13¾ and were it not for the fact that entrance scholarships at some of the public schools are still open to boys under 15 it is probable that 14 would be generally accepted as the age limit for a preparatory school It corresponds roughly to the change from childhood to puberty and as a matter of fact the great majority of boys go on to their public schools between 13½ and 14 A preparatory school may therefore be described as a private establishment which prepares boys for the Royal Navy and also relieves the public schools of all responsibility for the early years of an education extending over nine years at least (9–18) It is in fact part of a larger whole and can be fairly judged only as a part of that whole It was not however till July 1914 that the Board of Education altered its definition of a secondary school so as to include the preparatory school which was recognized thenceforward as an integral part of the public school system

Growth and Organization The *locus classicus* on the subject of preparatory schools is the Blue Book published by the Board of Education in December 1900 when Dr M E Sadler was Director of Special Inquiries and Reports (*Special Reports on Educational Subjects* vol vi 'Preparatory Schools for Boys and Their Place in English Secondary Education') The picture it presents is one of happy school communities sometimes of twenty five or thirty boys sometimes of as many as 100 usually in the country or at the seaside living together like a large family in the charge of a university graduate—married as a rule—with an assistant master for every nine or ten boys in a house which in many cases has been built for the purpose with playing fields for cricket and football The standard of efficiency and equipment naturally varies with the individual head master and the capital at his disposal, but the standard of comfort must be such as to satisfy the mothers of his pupils while many schools possess a carpenter's shop, a gymnasium a swimming-bath and perhaps a school chapel as well and a considerable number also provide a miniature rifle range and join in the terminal competitions of the Preparatory Schools Rifle Association Though one or two schools of this type existed in England before 1850, they only began to be numerous as national prosperity increased and railway development made travelling easy and the public schools themselves became more numerous and more popular Now they are to be found all over the United Kingdom especially in the South and South east of England Nearly all of them as already mentioned are boarding schools in private hands but some are day schools, and a few even of the more important public schools, like Clifton Rossall and Sherborne have preparatory departments of their own modelled on similar lines and separated both for work and play from the main body

Methods of Training I MIND The Blue Book of 1900 showed how long and earnestly teachers had protested against the disproportionate value assigned to advanced Latin and Greek in the entrance scholarship examinations at the public schools and the effect of this upon the preparatory school time table from top to bottom Eventually (1908) a committee of the Head Masters Conference was appointed to consider the subject under the chairmanship of Dr Burge of Winchester The report of this committee issued in 1909 frankly admitted that specialization in Classics at the preparatory school was incompatible with the proper teaching of English French geography and other important subjects and that some readjustment of the curriculum was essential How was the problem to be solved? In the light of the axiom that foreign languages should always be tackled in the order of difficulty and one at a time the committee might naturally have been expected to recommend that boys should begin French at 10 and Latin at 12 and that Greek or German should be postponed till 14 But in the face of strong conservative opposition this was not practical politics The committee however laid down the principle that a boy should not be allowed to take a third language besides English until the foundations of two of them have been securely laid and they appealed to their fellow members of the Head Masters Conference to give practical effect to this principle either by refusing to elect boys to scholarships for excellence in advanced Latin and Greek unless they had passed a definite standard in English and French or by redistributing marks so as to give a practical value to English and French in comparison with Greek If this plan were carried out they hoped that preparatory school masters would find out by experience how much Greek could be taught to boys under 14 consistently with a sound training in those general subjects which so long as specialization in Classics prevailed were compulsorily neglected

This report was at once recognized, not only in its treatment of the Greek question but in its attitude towards mathematics and English, and even such subjects as manual training and music, as a definite step towards a better curriculum, and

a considerable majority of public schools agreed (1912) to give practical effect to its recommendations Eton is the most conspicuous of the schools which still withhold their support and stand *super antiquas vias* On the other hand, ordinary candidates for entrance into Eton are not expected to offer Greek at all unless their Latin is good enough for Upper Fourth or Remove Strangely enough the report ignored the subject of Latin verse which was known to make large demands upon the time of scholarship candidates But its chief defect was its treatment of Natural Science for though in a revised edition it recommended that Nature study (*i e* training in observation and description of natural objects) should be introduced in connection with geography (the earth s crust earth knowledge and human races) yet the subject was not recognized as one of first rate importance and it is not included now in the Common Examination for entrance to the public schools Here and there a preparatory school master who is keenly interested in flowers or butterflies or fossils may devise a course and teach his boys the meaning and use of observation and experiment in connection with his hobby But he gets no official encouragement to do so The curriculum remains to all intents and purposes a literary one

II Body Health is the first consideration at a preparatory school not only because it is the physical basis of mind but because the happiness and well being of the little community largely depend upon it Thus many a boy who a generation ago would have been considered too delicate to be sent away from home is now able to share without risk in the wholesome order and discipline of school life among his equals to his own lasting benefit A well considered diet regular hours and habits physical drill and exercise and above all the games all contribute to this result Like other good things cricket and football can be overdone and no doubt the cult of them is a danger to be guarded against But for young boys at any rate they are unquestionably the best and simplest way of teaching the essential virtues of pluck and unselfishness It is not for nothing that for Englishmen all the world over 'playing the game' has become a synonym for fairness and straightforwardness and generosity in all the relations of life

III Character is rightly regarded as the flower and crown of school training and it is in the playing field as we have seen that it is most obviously developed A boy may get inspiration from a sermon in the school chapel or from the plain speaking of a master whom he admires but it is out of school that the real self emerges and a boy learns best by doing Nevertheless every day and all day he is under the subtle influences of his environment From the first he has been learning to find his feet among his equals to stand up for himself and yet to be interested in and increasingly responsible for others When he came to school he ceased to be the spoilt child of the nursery and began to learn the fundamental duty of the citizen viz to serve the community of which he is a member

Nor are the effects of such a training limited to the preparatory school "There can be no question wrote Dr James the Head Master of Rugby in the Blue Book of 1900 "that the whole face of public school education has been changed since the days when it was the common custom to plunge little boys of 8 or 9 into all the dangers and difficulties of a great school' The secret of the change lies mainly in the fact that at his preparatory school a boy has learned to regard his masters not as natural enemies but as human beings and friends Thanks to these happier relations bullying has disappeared disciplinary difficulties have been enormously reduced there is more courtesy and refinement and yet boys are not a whit less manly than they were

The Association of Preparatory Schools dates from 23rd December 1892 when fifty five head masters met in London and organized themselves with a view to mutual counsel and co operation and also to provide a recognized channel of communication with the public schools and other educational bodies It now includes some 430 schools Its affairs are administered by a council consisting partly of local partly of representative members its organ is the *Preparatory Schools Review* The relations of the Association with the Head Masters Conference have become closer and more effective in recent years Since 1906 a Joint Standing Committee has regularly met to discuss matters of common interest One outstanding result of such meetings was the curriculum of 1909 (revised in 1916) already described Another is a systematized course of Bible teaching the work of a joint committee (1912) But perhaps the most important link between the two bodies is the Common Examination for Entrance to the public schools which dates from 1903 and is organized by a joint board Identical papers are set for all the various subjects and the examination is held on two specified days in each term at the preparatory schools themselves This arrangement of course does not imply uniformity of subject or of standard the examination papers are sent for correction to the public school for which each boy is entered and no marks are published But it does ensure that the candidates are examined under the best possible conditions and parents are saved the trouble and expense of journeys to the public schools concerned Seventy three public schools now avail themselves of this Common Entrance Examination

With the Board of Education preparatory school masters have so far had very little to do They share to the full in that dislike of bureaucratic interference from outside which is characteristic of Englishmen But most of them have come to recognize that both in their own and in the national interest every private school may fairly be required to show that it is adequately equipped for the discharge of its duties before it claims the right to teach and to develop along its own lines and early in 1914 the Association of Preparatory Schools accepted the principle that some system of inspection is desirable If the Board of Education will act up to its promise to encourage independence in the schools and avoid uniformity it is probable that preparatory schools which have nothing to fear from inspection on the score of equipment will welcome it as the simplest method of proving their efficiency The State on the other hand may well be glad to find out at first hand how that unique and invaluable English product—the public school spirit—is cultivated in its earlier the preparatory school stage G G R

PREPARATORY SCHOOLS, THE ASSOCIATION OF —(See Preparatory Schools)

PRESENTATION.—(See Five Formal Lesson-steps The)

PRE-SHAKESPEAREAN DRAMA.—(See COURT INFLUENCES AND CHILDREN ACTORS IN THE DEVELOPMENT OF THE PRE SHAKESPEAREAN DRAMA)

PRESS, THE FREEDOM OF THE —The right to print and to publish books newspapers and other matter without undue interference from the law is one which is for its special purposes of signal importance to the educationist in his calling Lord Hardwicke said that though the liberty of the Press is in everybody s mouth there is nothing less understood than the nature of that liberty And again The laws of England know of no liberty peculiar to the Press of publishing to the world any defamatory matter to the prejudice of superior inferior or equal That is to say the Press like the individual citizen is theoretically free under the law until that freedom is abused or until it becomes inconvenient at a time when any violent disturbance has held up the normal relations of the State with the populace (as during the Great War of 1914 and the succeeding years) However this restriction is not likely to affect unduly the ordinary offices of educational literature which, so long as it keeps to its own recognized functions may be held virtually exempt from undue or arbitrary external supervision It is on the side of religious or political instruction where the risk of offending against the recognized code as legally enforced is most to be feared But heresy in a schoolbook under the present system of education and its literary official safeguards hardly needs to be reckoned with Indeed the educational Press is so guarded as to be in little danger of disturbance from outside censorship If we trace back the printer s liberty in his craft we find Stationers Hall still by its mere act of registration reminding us that a book like any member of the community needs to be definitely assigned its legal place in the official record Milton in his famous tract the *Areopagitica* recognized that books might need to be confined and treated as malefactors There was for long an obstinate belief dating from the reigns of Henry VII who saw the Press introduced as a privileged immigrant and of Henry VIII who reinforced the tradition that it was the king s right to govern it control its operations and enact very strict conditions for the printing of books

Under Edward VI the custom of the royal licensing of printers was reaffirmed and under Elizabeth we find that the excessive number of presses which had sprung up in her reign was counted an infringement of her rights Only London and the two universities of Oxford and Cambridge were allowed the right of printing and the Archbishop or the Bishop of London and their chaplains were to exercise a close continual and expurgative care as to whatever matter the presses sent out

In 1637 the right of controlling the printers through the stationers was fully assumed with every penal exaction by the Star Chamber and in 1645 the Long Parliament went to a length that alarmed Milton whose *Areopagitica* is the most eloquent plea in literature for the liberty of the book Other influences worked for the same cause The Censor (Bohun) licensed a book on one occasion that the House of Commons declared ought to be burnt by the common hangman and this flagrant instance precipitated the suppression of the literary censor s office

After the Abolition of the Censor's Office. In 1695, the old repressive statute was at length struck out of the list and although we have to recall how, under Queen Anne Steele and Defoe suffered ignominiously under the law for the excessive freedom of their printed utterances the practical liberation of the English Press from its old bonds was by the end of the eighteenth century fully effected The next step was gained in 1792 when the Fox Libel Act came into force and "the decision in cases of libel passed from the judge to the jury

Freedom of the Press Abroad In other countries, we may trace a similar line of advance towards an adjustable standard of liberty in printing and an exemption of the school book from the censor s more jealous offices except where the Church fears for its children and their dogmatic teaching

We are occasionally reminded by legal historians in America that the constitution of the United States expressly forbids Congress to pass any law abridging the freedom of the Press In spite of it, in 1798 an Act to punish those who printed matter likely to cause sedition or work against the interests of the Government was put on the statute book It is clear then that the freedom of the Press and the liberty of the book like the liberty of the subject are conditional and liable under particular circumstances to be rudely abrogated But to all intents and purposes the educationist is free to express himself and to print his facts and opinions, and personal views while he observes the ordinary terms of good feeling and public decency and remembers that the law of libel and the laws of copyright cannot be neglected in any book review or printed paper

John Wilkes It is hardly necessary here to do more than mention the notorious case of John Wilkes who was sent to prison in 1768 for saying that George III had uttered a falsehood in a speech from the throne This was in his outspoken period ical *The North Briton* (No 45) Wilkes was hardly a worthy champion of the cause of literature, as against the Philistines of the law, but his name more than any other unless it be Milton s has come to be associated with the term the Liberty or the Freedom of the Press

Finally it may be said that those authors and writers who deal with educational matters and do it so progressively as to outrun the current of opinion in their day are very much in Freude s case He speaks of the invisible censorship set up for him by the conventional intellectual habit of his time and that sense must react on the liberty of every writer and thinker before he comes within the ascertained legal limits of the Press at all The great restriction is not that of the law but of the received public and private opinion of the time

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PREVENTION OF CRUELTY TO ANIMALS, THE ROYAL SOCIETY FOR THE —At the commencement of the nineteenth century cruelty to animals was so little regarded that a charge of horrible cruelty to a cow was dismissed on the ground that the cow was only a farm implement and in 1809 the House of Commons decided that the amelioration

of the condition of animals was 'not a fit subject for legislation' In 1822 an Act called Martin's Act (after its promoter) was passed to prevent the cruel and improper treatment of cattle and in the same year the Rev Arthur Broome founded a Society for the purpose of preventing the cruel treatment of brute animals The Society received little support at first and lingered on with small success until in 1840 Queen Victoria granted it the prefix Royal and became patroness —carrying out her own expressed conviction that "No civilization is complete which does not include within its sphere of charity and mercy the dumb and defenceless of God's creation

To enumerate the abuses removed by the Society since 1822 is to give a catalogue of the cruelties practised by our grandfathers Act after Act was passed through its efforts and the so called sports of bull baiting bear fighting cock fighting and dog fighting became things of the past but only after repeated refusals of Parliament to interfere Cruel practices in dealing with fowls dogs calves were put down and in 1834 the use of dogs as beasts of draught or burden was made illegal in the United Kingdom Not only were the Acts passed but the Society took active measures to see that they were enforced Upwards of 250 000 convictions against offenders have been obtained by the Society through the agency of its inspectors They visit cattle markets fairs race meetings and other places where owners of animals congregate with their beasts and also patrol the streets and roads in their districts—more however for the purpose of prevention than prosecution for there are four cautions given for every one case that is taken before magistrates

Educational Work of the Society The feeling of the nation has greatly changed since 1822 in regard to animals and some of the change is doubtless due to the educational efforts of this protective Society It awards silver medals for animal life saving and it encourages in schools the teaching of kindness to animals by its annual school essay competitions it organizes bands of mercy for children all over the country and it induces the clergy to set apart a Sunday for sermons on mercy to dumb animals it publishes magazines and pamphlets and lends lantern slides for lectures The Society considers education against cruelty as its most powerful weapon for education means greater knowledge while cruelty is usually due to lack of it

Since 1870 the Society has annually invited all London schools to permit pupils to write essays on the duty of kindness to animals and the number of schools competing has increased year by year Ordinary prizes are given to a school for the two best essays which are sent to the Society Again these essays are placed in a competition and principal prizes are awarded for the best essays in the whole competition For many years the presentation of the prizes took place at the Crystal Palace and the Society frequently was able to secure the patronage of a Royal Princess to make the presentation

In 1865 Dean Stanley preached at the Chapel Royal Whitehall on the subject of kindness to animals Ever since that date the R S P C A has made a practice of inviting the clergy to set apart a Sunday known as Animal Sunday (preferably the Fourth Sunday after Trinity) for sermons on the duty of justice and mercy to animals In 1911 the appeal was extended to Nonconformist ministers and met with a gratifying response

The Band of Mercy Feeling the importance of instilling into young minds the principles of mercy and kindness the Society inaugurated in 1875 the Band of Mercy movement in order to train young children in habits of kindness and gentleness to all dumb creatures Over 800 such bands have been formed and for the use of the members individually and collectively the Society publishes a bright monthly magazine (called *The Band of Mercy*) and issues a Service Book a Song Book and numerous attractive and instructive leaflets The work of a Band of Mercy can readily be adapted to parts of the curriculum of a school and the Code of the Board of Education suggests that children shall be taught to appreciate and understand animals The Society is prepared to give advice to all who ask for help in forming a Band of Mercy For their use the Society has a very large collection of lantern slides illustrating every phase of animal life and many others are sets to illustrate stories of animals Sets of slides are sent out gratis with suitable descriptive matter

Organization and Publications The Society has its headquarters at 105 Jermyn Street London S W 1 but its branches and auxiliary branches are numbered in hundreds and spread all over England Many other sister societies have been formed in Scotland Ireland Gibraltar Malta India China South Africa America and almost all countries of Europe

The Society consists of life members annual members who subscribe one guinea annually and *ex officio* members who are the branch secretaries Its publications include a large number of volumes on natural history and of stories about animals and many pamphlets for children at very low prices and suitable for distribution in quantity *The Animal World* described by the Society as a monthly advocate of humanity contains records of the Society's activities besides articles on habits and treatment of animals and other matter interesting to lovers of animals

Among the subjects which have taken up the attention of the Society is the traffic in worn out horses started some half a century ago Every year large numbers of these animals were shipped to Holland and Belgium The Society secured an Act in 1909 for the compulsory examination of every horse immediately before shipment and in 1913 a Bill to stop the traffic was read a first time and after a good deal of opposition was passed in 1914 Its provisions include the certifying of fitness to work and ability to travel without suffering The examination is carried out by special Inspectors of the Board of Agriculture

The practical abolition of funeral plumes has been brought about by the Society in co-operation with the Undertakers Association so that from 1st January 1914 no undertaker throughout the United Kingdom would allow these plumes to be fixed on any horses employed by him

PREVENTION OF CRUELTY TO CHILDREN, THE NATIONAL SOCIETY FOR THE —The first society of this kind was established in the United States the earliest largest and most influential being that of New York In England Liverpool followed in 1883 and London in 1884 and now by means of other local societies and aid committees connected with the central society

the work of protecting children is rapidly spreading

The Rev Benjamin Waugh a Congregational minister was the main promoter of the National Society now incorporated by royal charter and having offices at 40 Leicester Square London W C 2

To show that many defenceless children require protection from parents—their natural protectors—it is only necessary to mention Factory Acts Education Acts Reformatory and Industrial School Acts the Criminal Law Amendment Act and the Dangerous Performances Act—all of which represent special legislation for the sole purpose of securing proper treatment of children

The work of the Rev Benjamin Waugh received special recognition and encouragement in the Prevention of Cruelty to Children Acts of 1894 and 1904 These Acts impose penalties on those who inflict needless suffering punish neglect exposure and assault specially deal with drunken parents and such as turn their children into the streets to sell or to beg The carrying out of such Acts requires more watchfulness inspection and supervision than can be afforded by the police and it is the work of the Society to supply the need As a proof of the real need of such a Society it may be stated that in each of the three years 1912–1914 nearly 50 000 cases were investigated annually and the children involved numbered nearly 160 000 each year But the improvement in treatment of children in recent years is shown by the fact that in 1893–1894 10 9 per cent of the cases led to prosecutions and in 1914–1915 only 3 6 per cent The large number of investigations shows how vigilant is the observation kept on parents who show signs of neglecting their families and in this respect the Society is aided by various relief agencies

Answers to Objections As in the case of most public institutions objections have been raised against the National Society for the Prevention of Cruelty to Children the one most frequently heard in its early days being that it was not needed It was a matter of astonishment to many people especially the naturally kind and sympathetic that children should need protection from those who are usually looked upon as their natural protectors and lawful custodians Fortunately the increase of interest in child life and sympathy with child suffering has made this objection less frequent Another still often heard is that this is an interfering Society We shall soon want a Society for the protection of parents says these objectors who look with jealous eyes on any encroachment on the parents and teachers rights in regard to inflicting punishment The Society recognizes the value of discipline and punishment and in the Prevention of Cruelty to Children Act 1904 (Sec 28) the Society s own principles were clearly set out by its own request—

> Nothing in this Act shall be construed to take away or affect the right of any parent teacher or other person having the lawful control or charge of a child to administer punishment to the child

But the interference usually objected to is that the Society inquires unnecessarily into people s domestic affairs and becomes unduly officious in order to make work for its inspectors But the interference is between the starver and the starved the brute and the object of his brutality and such interference is always and only in the interests of the child To those who plead the "liberty of the subject' the Society retorts that the liberty of the child includes the right to be properly housed fed and clothed by the parent at the parent s own cost It is also argued that the Society usurps the functions of the police, but the chief value of the Society s work is preventive—a work of warning and supervision which is quite outside the duty of a policeman It is an undoubted advantage to all concerned that the Society's inspectors are not policemen for information is often given to them which would be withheld from the police No cases are taken into court either by an inspector or a local secretary Each report is sent to headquarters where it is read by a member of the legal staff who decides what steps shall be taken A solicitor is instructed in every case and magistrates and judges have repeatedly testified to the wisdom of the Society s methods to the fairness of its advocacy and to the scrupulous care with which its inspectors give their evidence

In order to meet objections and to present the positive side of its case the Society has issued two concise pamphlets *What the Society is* and *What the Society is not* These may be obtained gratis on application to the secretary and give a very complete representation of the Society s aims and methods

Special Work Perhaps the saddest part of the Society s chronicle of cases comes under the description of 'Corruption of Morals In 834 cases many of the children were quite young and some of the offences were of the gravest nature The Society fears too that many cases of this kind are not reported and that terrible wrongs done to defenceless children are frequently hidden until it is too late to render help to the victims or to bring the offenders to justice

To encourage the spirit of inquiry the Society has established a Bureau of Information in St Martin s Street adjoining the central offices in Leicester Square London W C 2 The Bureau is packed with statistics and literature on every subject bearing on the child and its welfare The Bureau is open on week days from 10 to 5 and on Saturdays from 10 to 1 A librarian is on duty to assist inquirers and to give expert guidance to those who wish to make use of any of the material at his disposal

PREVIOUS EXAMINATION (at Cambridge University) — This precedes the degree examination and must be passed by all candidates for a degree It is in two parts the first consisting of Latin and Greek subjects the second of mathematics science and an English essay Candidates for Honours must also take an additional subject in mechanics French or German Greek ceased to be compulsory in 1919

PRIESTLEY, JOSEPH (1733–1804) —He was born near Leeds and after education in a dissenting academy became minister at Needham Market, in Suffolk While at Needham he wrote *The Scripture Doctrine of Remission* throwing doubts on the divinity of Christ and the doctrines of the Trinity and the Atonement In 1761 he became teacher of languages and literature at Warrington, and published his *Theory of Language and Universal Grammar* About this time he met Franklin and obtained from him materials for a *History of Electricity* (1767) and *Vision Light and Colours*

In 1764 he became LL D of Edinburgh and in 1766 a Fellow of the Royal Society Settling in Leeds in 1767 he devoted his mind to the study of chemistry He subsequently travelled in France and wrote controversial works on theological subjects which led his English readers to brand him as an atheist His reply to Burke s *Thoughts on the French Revolution* drew upon him the anger of a Birmingham mob which wrecked his house and its contents Priestley s great scientific work was the discovery of oxygen (1774) which he called 'dephlogisticated air and of the composition of water (1781) He also investigated nitric nitrous and carbonic oxides sulphurous acid hydrochloric acid and ammonia gas as he was specially attracted to the study of gases and their properties

PRIMARIAN —(See SCHOOL BOOKS HISTORY OF)

PRIMER —Originally a book of devotions which from the thirteenth to the sixteenth centuries was the ordinary Prayer Book used by the laity The contents of these books varied greatly but the most important common feature was the Little Office of the Blessed Virgin Mary and the primers always included the Fifteen Psalms (*i e* the Gradual Psalms), 119 to 133 the Seven Penitential Psalms and the Litany of the Saints The origin of the Primer has been traced to certain devotions invented for monks in their monasteries to be used in addition to the daily Divine Office The origin of the name is still obscure At first it meant a Prayer Book and the Prayer Book was in early times used as a first reading book for children in days when they learned to read in Latin and not in English Almost every child who then learned to read did so with the purpose of becoming a clerk whose profession required him to know the Psalms by heart The 'day book of John Dorne bookseller of Oxford in 1520 records the sale of books named primarium pro pueris and examples still exist of a Primer most necessary for the educacyon of children' dated 1538 and containing the alphabet as well as the prayers and Psalms The Primer survived the Reformation and the "Royal Primer published in 1545 in the name of Henry VIII superseded all others Under Elizabeth Protestant primers came into use and the Catholics had to be content with earlier copies which they could manage to secrete and preserve

In modern times the name is applied to the first books from which a child in the infants school is taught to read

PRIMITIVE EDUCATION —Anthropology has shown that the backward or simpler societies of the human race do not deserve the title of 'savage or "wild' Though it is possible that some of them have been unprogressive for centuries and that others are actually decadent there is little doubt that on the whole their life and institutions are of the same character and development as those of 'primitive society which it is convenient to define as the immediate predecessor of the first civilizations By describing the educational systems and methods of these simpler societies we may reach an approximately correct understanding of that primitive education from which have been evolved the systems of modern times

The famed educational system of ancient Greece —not of Sparta only but of Athens and the rest of the Hellenic world—may without difficulty be traced back to the primitive type "Savage education' (the epithet is used for convenience as referring to the simpler societies in general) is actually an elementary form of the Greek twofold curriculum of γυμναστική and μουσική The savage boy and girl have their physical technical and economic training, and their instruction in the lore and songs of the tribe And as with the Hellenes the link between the two "sides of the schooling is dancing In dancing, religious social and gymnastic alike, thought and action meet in harmonious interplay

General Characteristics Two stages are universal First there is the informal teaching in the home from infancy to puberty and secondly the formal instruction beginning at puberty and carried on for a period of varying length This is 'public schooling and is in the hands of the chief men of the community The first stage corresponds to primary the second to secondary education Frequently we find an intermediate stage from the age of 7 or 8 to puberty and in many cases there is a natural overlapping the public instruction beginning before puberty or the home instruction carried on beyond puberty

As a system of practical and social education it is extremely successful The boy and girl learn all the means of livelihood and still more importance is attached to the social and moral instruction The result is highly efficient citizens law abiding to a degree impossible in the modern state and organized for social interaction in a way no longer feasible in complex societies There is not lacking a liberal element which is based upon the tribal folk lore religious traditions songs and dramatic dances It is of course obvious that no abstraction is made from the sum of knowledge just as the principle of primitive language is the holophrase so the principle of primitive learning is the *ensemble* There is no separation of arithmetic physics or grammar from the general block Only in the higher savagery do we find the beginnings of abstract knowledge

Parental Training Based on Imitation and the Play Instinct The play instinct and its correlative the imitative instinct are the earliest educative forces in the life of the child The savage recognizes this fact and exploits it Play amuses and interests the groping intelligence it develops the physical organism in co operation with the numetic impulse it develops observation and imagination Imitation of the work and habits of the parents is the foundation of technical and moral education As the child grows this play instinct is usually diverted by the parents for the good of the family into channels of actual work as is the case with the lower classes in modern society The Kaffir parent 'wisely allows the children to regard the work as play [1] In Guiana it has been noted how the children in their play imitate their parents [2] Twana children were encouraged to mimic the occupations of their parents [3] This of course is an educational truism "By unconscious absorption and by constant inculcation the boy and girl became the accomplished man and woman [4] That well expresses this static form of elementary education "Everywhere' among the Amerindians "there was the closest association for education of parents with children who learned the names and uses of things in Nature At a tender age they played at serious business girls attending to household duties boys following men s pursuits Children were furnished with appropriate toys they became little basket-makers weavers potters water carriers, cooks,

archers stone-workers watchers of crops and flocks, the range of instruction being limited only by tribal custom Personal responsibilities were laid on them and they were stimulated by the tribal law of personal property which was inviolable Among the Pueblos cult images and paraphernalia were their playthings and they early joined the fraternities looking forward to social duties and initiation The Apache boy had for pedagogues his father and grandfather, who began early to teach him counting to run on level ground, then up and down hill, to break branches from trees to jump into cold water and to race the whole training tending to make him skilful strong and fearless The girl was trained in part by her mother but chiefly by the grandmother the discipline beginning as soon as the child could control her movements but never becoming regular or severe It consisted in rising early carrying water helping about the home cooking and minding children At six the little girl took her first lesson in basketry with yucca leaves Later on decorated baskets saddle bags beadwork and dress were her care [4] The American Indians were among the most advanced of the simpler societies and in their educational system showed much thought and care probably being at about the same stage of development as the early Spartans In New South Wales the father made toy spears for his boys to practise throwing and the mother gave the girls digging sticks The parents take as much delight in this business as we do in teaching our children the alphabet' The Australian father took his boys out hunting and made small boomerangs for them to play with [5] The Dyak makes model boats shields spears swords and bows and arrows for his boys In New Guinea boys of 5 by practising with models learn to use the *isja* a canoe which easily capsizes in a few years they can manage the large boats Haddon reports the same of the Torres islanders Among the Pueblos agriculture hunting pottery weaving and building were all imitated in the play of the children [5]

Though this primary education is unsystematized and informal it cannot be described as irregular or spasmodic Savage life is so difficult that the family economizes all its energies and utilizes every possible asset to the utmost Among these is the economic contribution of the children This itself is a form of education And among the higher peoples such as the Amerindians there are the beginnings of system Among these is the employment of the grandparents otherwise of little use to the tribe as teachers [6] It seems therefore a mistake to depreciate it or to confine as Malinowski does its importance to the female sex He writes

It seems that the education received by the children in their parents camp where they are probably more under the influence of their mother and perhaps of other women that this education is definitive only for the females who can learn from their mothers all they will want in their future life For the boys, this first education is of secondary importance [5]

A point of interest is the question of discipline Some observers state that the boys are allowed full freedom and are never punished others that their first lesson is in obedience and politeness [7] Malinowski concludes about the Australians "It is impossible to conceive of any serious education without coercive treatment, especially at that low stage of culture But as the children are continually with their mother, and very often with their father the parental influence must be of great importance in the questions of the arts of life" [5] The fact is that the savage defers strict discipline, no doubt wisely, until the approach of puberty

The Transition from Childhood to Adolescence. The ritual observances which introduce the child to adult life are frequently preceded by some ceremony at the age of 7 to 9 A preliminary form of circumcision is then practised by some peoples Many begin at this age the separation of the sexes, which is usually most stringent and continues till marriage Savage pedagogy could not tolerate, at least after early childhood the idea of co education This intermediate stage often includes a more or less systematic education by the father or officials preparatory (where initiation is in force) to the ordeals and severe *régime* of 'man making

Australian boys go to the male camp at the age of 8 or 10 They are the fags of older boys Carr describes this as a 'real school' Meanwhile the fathers begin their serious training in hunting and other arts [1] Before being initiated to the warriors training corps the Masai boy learns to use arms and drive cows his father teaches him [8] Kaffir boys are separated from the girls at the age of 11 and come under their father's guidance [9] In North America, the boy was turned over to his father at the age of 8 [10]

This age is a half way mark physical and psychical between infancy and puberty, and the recognition of the fact by these simpler peoples and their insight in dealing with the various stages of childhood and adolescence are interesting illustrations of social instinct

Some fairly complete examples of this intermediate schooling may be appended "The Eskimos were most careful in teaching their girls and boys setting them difficult problems in canoeing sledging, and hunting showing them how to solve them and asking boys how they would meet a given emergency" [4] Referring to this period Mason also writes "The aborigines of North America had their own systems of education through which the young were instructed in their coming labours and obligations embracing not only the whole round of economic pursuits but speech fine art customs etiquette social obligations and tribal lore [4] Among the Bororos of Brazil systematized education begins from 5 to 7, when the boy is sent to the *bahito* This is "a public school where the children are taught spinning, weaving the manufacture of weapons and above all singing upon perfection in which is centred the ambition of all those who wish to become chieftains [11]

The "Initiation" and Instruction of Adults The majority of the simpler societies practise at or about the age of puberty what is generally termed "initiation" Many describe it by the expressive term 'the making of young men Very full accounts of the initiatory ceremonies of many races have been written in recent years and the details of ceremonial and instruction are often most intricate and voluminous as, for instance, among the Australians [12] In some cases the initiation is into a special society and not merely into the ranks of the "men" In the majority it is only into the latter who though they conceal their quasi Masonic proceedings from the females and uninitiated boys do not form a "secret society" Other races have no such initiations, but probably the

older men take the boys in hand at the age of puberty and subject them to considerable informal discipline

Initiation is often by stages in some cases full participation in citizenship not being attained till middle age Australians and Kaffirs are notable cases But the educational department of initiation is generally concentrated into a short period of some months or a year This forms a kind of finishing school and as a rule the training is very severe The whole proceedings are dominated by religion the unconscious motive for this being to inspire the boy with reverence for society and obedience to his elders A further reason is the transmission of the tribal lore and magic Moral instruction predominates various ordeals are undergone In particular the laws of marriage are inculcated and in connection with this department of life, or with sexual hygiene various mutilations are inflicted Some of the ordeals have a magical meaning others are frankly methods of hardening and testing courage The whipping of Spartan boys at the altar of Artemis Orthia is with other details of the Spartan ἀμωγή [18] a direct descendant of primitive initiation as in certain aspects is the confirmation of the Christian Churches [14]

Initiation ceremonies as distinguished from the instruction need not here be described Among the Australians 'education depends still more on another set of facts namely on the facts of initiation and the secret society [*sic*] formed by all initiated men The boy's education begins with the moment when he leaves his parents joins the young men's camp and begins to undergo a series of initiations' [5] For several months the Kurnai youth are in the bush being trained by the old men They are taught self control and instructed in 'the manly duties of the Kurnai until the old men are satisfied that they are sufficiently broken in to obedience and may be trusted to return to the community [15] In New South Wales the instructors taught the boys in seclusion to play 'the native games to sing the songs of the tribe and to dance certain corroborees which neither the girls nor the uninitiated are permitted to learn They were also instructed in the sacred traditions and lore of the tribe to show respect to the old men and not to interfere with unprotected women [16] Much instruction was given by pantomime The old men played like children to show the boys that they must no longer be children [15] The magic and lore were taught in the same way as also were the prohibition of offences and the laws of tolemism and marriage [12] Of the Torres islanders Haddon reported that initiation was a very good discipline The self restraint acquired during the period of complete isolation was of great value and being cut off from all the interests of the outer world the lads had an opportunity for quiet meditation which must have tended to mature their minds especially as they were at the same time instructed in a good code of morals It is not easy to conceive of a more effectual means for a rapid training' [17] In Torres Straits the boys "were instructed in all that related to their daily life in the most approved methods of fishing fighting or housebuilding and in all the duties which are classed as man's work, in addition to rules of conduct the customs of the table and the traditions of the elders' [18] Of the discipline inspired by religious awe, among Dyak peoples during this instruction Haddon notes that "this intense feeling combined as it was with reticence and discipline had a strong educative effect on the people' [19]

The Bawenda have a training of about four months 'They are warned against wrong and vicious habits and encouraged to be faithful and loyal subjects to their chief and to be good husbands and fathers The gathering is known among the natives as 'school'" [20]

An Amerindian's public schooling began with a "medicine dream following a fast as soon as his mind 'became white' (*i e* at puberty) The vision was an opportunity for choosing a vocation and for setting up ideals [10]

Girls at puberty are often especially among Africans placed under a matron and instructed in household and marital duties

There are many interesting problems arising out of primitive education which it is impossible to discuss here One may be mentioned Curr noted that in the Australian native schools the pupil masters reading writing and arithmetic more quickly than the English child [21] Kidd observed of the Kaffirs that they are very intelligent until puberty after which date development seems arrested [9]

The question of the connection of such arrest with cranial formation (the metopic suture) is still unsettled A E C

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PRINCE EDWARD ISLAND, EDUCATION IN —(See CANADA EDUCATION IN)

PRINCETON UNIVERSITY, U S A —(See UNITED STATES COLLEGES AND UNIVERSITIES OF THE)



University of Rome—The Courtyard

PLATE LXXIV

PRISCIANUS—With Donatus (*q v*) Priscianus shares the reputation of being the most prominent of Latin grammarians of the whole of the Middle Ages He was born or at any rate educated at Caesarea in Mauretania in the latter half of the sixth century Paulus Diocanus calls him a contemporary of Cassiodorus (A D 468–562) He taught at Constantinople Sandys points out that Boethius marks the end of the Roman Age and he died A D 524 and that the appearance of Priscian s grammar brings us to the confines of the Middle Ages Anyway Priscian may be said to bring together all that was known of grammatical art in antiquity in the same way that Pliny (*d* 79) had brought together all that antiquity knew of natural history

It is worthy of note that in the ninth century the Benedictine Rabanus Maurus the head of the great school at Fulda wrote an abstract of Priscian and the whole of the mediaeval grammarians based their work on Priscian and the English Ælfric (*c* A D 995) explicitly published extracts from Priscian with English translation Still more noteworthy is the fact that the Renaissance grammarians largely borrowed from the same source Though (*c* 1200) Alexander de Villa Dei produced his *Doctrinale* which became so popular and later in the thirteenth century Johannes de Garlandia and Michael Marbais whose book *de Modis Significandi* gave rise to the epithet Modista though Eberhard (Graecismus) and though Ludolphus (Florista) all so strongly condemned by Erasmus in the early sixteenth century wrote their widespread complicated grammars—yet all of them were essentially based on Priscian for the original essential subject matter In the Renaissance times Rudolph Agricola the great Northern educationist acknowledged the value of Priscian by issuing a volume of extracts which had great vogue

Priscian's Grammar consists of eighteen books The first sixteen treat of accidence the eight parts of speech letters syllabus etc The last two books are on syntax Of Greek authors Priscian follows Apollonius Dyscolus and of the Latin writers he is closest to Flavius Caper It must be remembered that Priscian had as predecessor Aelius Donatus with whom he is so constantly associated though Donatus lived 200 years earlier Donatus s smaller work (the *Ars Minor*) became the great elementary grammatical text book whilst Priscian s became the standard advanced grammar But the original grammar of Priscian became greatly obscured by the glosses and commentaries

The special feature of Priscian s grammar is the large number of quotations from Latin and Greek classical authors to illustrate grammatical usage Priscian for instance cites from Virgil more than 1 200 times and from Terence not quite half this number of times (*Comparetti* p 70) The Greek authors from whom he cites are chiefly Homer Plato Isocrates and Demosthenes The significance of the appearance of these passages in the standard grammar of the Middle Ages is the attention that was drawn to the authors cited in ages when the classical authors (especially Greek) were not continuously read

Shakespeare makes one reference to Priscian The schoolmaster Holofernes in *Love s Labour s Lost* (v 1 31) says "Bon bon fort bon Priscian a little scratched twill serve' The proverbial expression of breaking Pegasus s neck in the sense of writing ruleless verses is associated by Alexander Pope with the "breaking of Priscian's head" (*i e* writing bad grammar)—

> 'Some free from rhyme or reason, rule or check
> Break Priscian s head and Pegasus's neck"
>
> (*Dunciad* A D 1728)

F W

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PRISONERS OF WAR, THE EDUCATION OF BRITISH—The outbreak of the Great War in August 1914 was immediately followed by the detention and subsequent internment in Germany and Austria of those British civilians who happened to be in those countries and who failed to make good their escape before the frontiers were closed to travellers Consequently over 4 000 British subjects found themselves in a few weeks in an internment camp at Ruhleben near Berlin where most of them remained until the Armistice of November 1918 To meet the needs of these men in the way of books for study purposes an organization was set on foot in London by Sir Alfred T Davies K B E C B the Permanent Secretary to the Welsh Department of the Board of Education at Whitehall which was destined later to play an important part in connection with the provision made for the large number of British and Colonial (civilian military and naval) prisoners of all ranks who in the course of the war fell into the hands of the Central Powers Large consignments of books contributed by willing donors in all parts of the country were dispatched from time to time to Ruhleben where education among the interned men soon reached a high level of organization the services of some 200 professors and teachers who happened to be among the inmates of the camp being utilized for instructional purposes Courses and classes in many subjects were arranged and everything done to further intellectual exercises that was possible in the cramped conditions of a concentration camp

British Prisoners of War Book Scheme The development of the work at Ruhleben and the passing of the War Charities Act 1916 led to these pioneer efforts on behalf of civilian prisoners being expanded in the summer of 1916 into those of the British Prisoners of War Book Scheme (Educational) —a war charity which under the same guiding head carried on and developed on behalf of the naval and military prisoners the work begun at Ruhleben The system adopted was to offer to provide any prisoner free of cost with any book or books in any language or languages and on any subject or subjects for which he might apply Many thousands of prisoners spread over camps in Germany Austria Bulgaria Turkey (in Europe and in Asia) Switzerland and Holland availed themselves of the opportunity so offered to pursue serious studies generally amidst the most unpromising conditions In some cases it was to renew

acquaintance with almost forgotten subjects in others to resume studies rudely interrupted by the war in the case of the remainder it was to begin the study of an entirely new subject or subjects The reading of these interned men had the widest possible range and embraced subjects usually to be found in the curriculum of a secondary school, university technical college school of art or of foreign and Oriental languages French German Russian Italian were especially—and naturally having regard to their environment—the subjects of close study by the interned men for whom books in as many as fifty two languages were obtained and forwarded from the depot in London Navigation was taken up with zeal by many men of the Mercantile Marine or British Navy numbers of whom were interned at Groningen in Holland

Examinations for Prisoners Prosecution of systematic study brought a demand for examinations and even these were arranged for and held while the war was in progress at Ruhleben and at Groningen The difficulties incident to the censoring of the books and the maintenance inviolate of the secrecy of the questions set at the examinations were successfully overcome by the organization which sent out the books As a result no fewer than 196 candidates at Ruhleben entered for the examinations of the Royal Society of Arts and 16 for the Matriculation and other examinations of the University of London whilst a few individual students were enabled to take the professional examinations of the University of Edinburgh and certain other public and professional bodies the total number of examination papers taken by the interned men being over 500 The failures among the candidates were a negligible quantity and the standard of passes and honours obtained was much higher than the usual average Forms of Record were provided on which 'student captives' as these studious prisoners came to be called could record their studies and have them attested by their teachers with a view to being used as credentials on their regaining their liberty A concession of the Board of Trade (Marine Department) under which five months study during captivity was allowed to count as equal to one month's service at sea was much appreciated by those members of the Mercantile Marine who took advantage of it in order to sit for the Government certificates of seamanship navigation marine engineering etc Of the 286 men who sat for these examinations no fewer than 283 passed Several of them, so the examiners reported passed their tests brilliantly and emerged from captivity in possession of certificates which gave them a higher rank in the British Merchant or Fishing Services than they possessed when they were taken prisoner

Aims and Accomplishments of the Scheme The aim of the scheme is sufficiently indicated by its motto "Captivorum animis dent libri libertatem By all these means thousands of men were saved who in the words of Professor Gilbert Murray "could face death and endure suffering with almost incredible fortitude but might have been unable to resist the slow demoralization of prison life with no set purpose to look forward to and no distraction to make them forget their food buckets and their jailors" The law as the same writer has it that a man shall not live by bread alone was found to be nowhere more penetratingly true than in connection with those who were called upon to endure the actual conditions of life in a prison camp, or even in an internment camp The scheme which regulated the supply of books to these prisoners was a plan for providing interesting and purposeful occupation for men for whom such occupation was a matter of vital necessity That the scheme which is believed to have been unique among war-time activities succeeded beyond all expectation is proved by the grateful letters which were received from numbers of the prisoners both before and after their release

Ruhleben Library The more valuable of the books gathered together at Ruhleben together with many thousands of volumes presented or purchased out of funds provided by a generous public and collected after the declaration of peace from as many as possible of the other camps in Germany were transferred in 1919 to the Central Library for Students 20 Tavistock Square London W C 1 where the collections subsequently became available for lending to needy students scattered over the British Isles

For his services in initiating and directing the operations of the scheme its author received special recognition from His Majesty the King who conferred upon Sir Alfred T Davies the distinction of a Knight Commander of the Most Excellent Order of the British Empire whilst two other members of the book scheme staff were appointed to the Membership of the same Order

A T D

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Articles in *The Nation*, 29th June, 1918 *The Times* 15th July, 1918 the *Daily Telegraph*, 20th Aug 1918

PRIVATE COMMERCIAL SCHOOLS—The history of Private Commercial Schools in this country goes back to 1870 round about which year several of the most flourishing institutions were opened In the early days their claims to be expert were very modest and their curricula were somewhat restricted In general there was a tendency to specialize on one subject which became the centre of the school's activities In one type of school the subject which received the most attention was handwriting the students for the most part consisting of boys who were preparing to enter into business offices where good handwriting was the only recommendation of a business character required from the junior The second type of school took shorthand as its central subject and in both types some English and polite letter writing was added together with arithmetic and a little book keeping The handwriting schools quickly developed a department for coaching students for professional preliminary and other examinations together with Latin, algebra and geometry subjects which had not come within the scope of the ordinary elementary schools or the general scheme of public education available for the masses In their early years they were attended almost entirely by pupils of the male sex and it was not for a considerable time that the demand for women clerks was created by the popularizing of shorthand and the advent of the typewriter The schools were for the most part one man schools

they were however supplying something which the State and semi-State schools failed to give and as they became known and proved their efficiency the number of students increased and new teachers were appointed generally men with a specialized knowledge of one or other of the subjects taught The proprietors of these early institutions appear to have been anxious to keep in personal touch with the whole of the school s work and this fact has had the effect of linking commercial education generally with the names of individuals In the early days of these ventures no attempt was made to open branches or develop the schools outside the area easily accessible from the original school In this respect there is a notable difference between this country and America Private commercial schools had an earlier beginning in the United States than in England having existed since 1840 and they are recognized as an integral part of American education A feature of their early development in this land of Chain Stores and Multiple Shops was the chain of schools all doing the same type of work, spread over a wide area linked together into one organization under one proprietor They have made a great reputation and have multiplied in response to a genuine demand which has caused the Public Schools of the United States to introduce commercial courses into their general curricula and they have been the means of encouraging the setting up of departments of commerce and administration in most of the colleges in the country As in England business education had a simple beginning it consisted of the most elementary work in pen manship book keeping and arithmetic and this sufficed until 1890 when conditions changed and new men entered the field broadening the conception of commercial education and extending the curricula of the business schools

Private commercial schools have had a great influence on other schools both at home and abroad They have provided a type of vocational training which supplied an undeveloped demand The result has been such a development particularly during the last thirty years that there is now an insistent demand for young people already trained for office work The employer has no time to do the training and he expects that it will be done outside The business man being no longer able to train his own assistants the private commercial schools have taken upon themselves the duty of supplying this deficiency since the public authorities failed in this respect That they have filled an important role in our scheme of education and that they have secured the favour of the public cannot be denied That the public and education authorities generally have been slow to see the necessity of setting up some form of commercial education is quite clear and indeed to day the authorities are still apparently unaware of the strength of the demand

The Need for Commercial Training The attitude towards vocational education in general has not been the same in the United States as it has in England, and the American attitude closely approximates to the position taken up in Germany, where there was before the war an almost inexhaustible supply of trained men from the vocational schools That training can be vocational and at the same time educational seems to be doubted by British education authorities The passing of the Education Act 1918 and the propaganda work done in connection therewith indicated most clearly that vocational education should not be entered upon at an early age and almost all are agreed that the Day Continuation School of the future should be the place for the continuance of general education up to the age of 16 The fixed point at which specialization should begin is always a difficult matter and it is submitted that specialization in commerce is a proposition wholly different from specialization in industrial pursuits There can be no doubt that engineering is best learned at the bench and the education that proceeds in conjunction with industrial training whilst of a general character may well keep in view the future life of a student or worker Similarly in all other trades the employer does not expect that the employee shall go into his employment equipped with specialized knowledge of his business All he demands is a general knowledge capable of being applied to the specific work of the future When a boy or girl enters commercial life the position is different A boy may be able to find employment as an office boy without any special training but a girl has no place in commercial life unless she has a specialized equipment not provided for her in the ordinary elementary or secondary schools Commerce therefore from a vocational point of view has a special position the shorthand typist must already be a shorthand typist before she can obtain employment whilst a young engineer or carpenter may have no knowledge of his future job and his employer will expect no such knowledge Hence something may be said for vocational training in commercial subjects The Education Committee and publicly maintained institutions have in the past made no provision and the private schools have filled the gap In the public evening schools we find that the demand for commercial education has been recognized but this in general is a recognition that the worker already engaged in business life requires to continue training in spare time The private institutions provide pre employment training and so long as the child may be considered to have completed his elementary education at the age of 14 years and so long as the attitude of the local authorities and the educationists generally is against vocational education of any kind under the age of 16 private schools for training in commercial subjects will have their place in the system The attitude of business men and the public generally towards schools of this type has been one of more than tolerance the fact that the majority of commercial schools undertake to find employment for their students will indicate the attitude of the business men, and this aspect of the activities of private institutions will play an important part in the future of these schools Notwithstanding the Education (Choice of Employment) Act and the powers conferred thereby on local authorities to assist in the placing of young students in life the private institution has a far greater scope in this direction and in consequence, private schools will still hold their place

Apart from the failure of the Board of Education to distinguish types of vocational education publicly controlled commercial schools in so far as they have been set up for full time work, have not had the success that has been vouchsafed to the private school, on account of the amount of red tape connected with the working of public institutions in England The student wishing for day time instruction in commercial subjects must,

if he attends a State aided institution generally take up full time training in all the subjects of the curriculum, he must attend between set hours and variations to meet the requirements of individuals have not in the past been the rule The coming of the part time continuation schools will create a new point of view and this will be remedied but the fact remains that in the past, whilst State-aided institutions have been unable to cater for the part time student in commercial work the privately owned school has been able to put forward a syllabus of work that can be varied to meet the demands of the individual The well educated public school boy or the university trained woman has been able to supplement general education by training in the purely vocational clerical subjects The demands of the employer have been met and it is generally realized that the business man s idea of what he requires in his office will not in general be the idea of a local education authority whose schools depend for their existence upon a grant from the Board of Education

Specialization Whilst the cry of the educationists is that education shall be general and non vocational and that specialization shall be postponed until as late a stage as possible, the cry of the public is for vocational training The public is demanding specialized training with which to meet specialized conditions of employment and it is the private business schools that respond to this demand most readily It is not generally recognized however that to the private school was left the honour of instituting what is known as the course system of training Commercial education as supplied by our local authorities was originally training in isolated subjects, shorthand, book keeping etc and it is only during recent years that the principle of co ordinating commercial subjects has been insisted upon From their inception the private schools have seen the necessity of a complete and all round training in general education vocationalized that is, in English, arithmetic with vocational bias handwriting and other similar subjects They have therefore never claimed to train the man or woman to occupy a position that requires essentially years of patient and careful training " in the job Nor do they claim to prepare pupils along technical lines of a particular business In this sense our private schools have given education general in character their functions have been to prepare young men and young women in the fundamentals of a business education specializing in the subjects taught but not specializing in their application They have therefore, in the past made the application of their training sufficiently broad to cover all the probable demands of the would-be employer

Progress in the Twentieth Century The progress made during the last twenty years has had four principal features it has continued side by side with a stirring towards the creation of commercial schools in public education and has seen the establishment of the chain school system in this country, together with the institution of higher courses of study in some of the schools and the creation of highly specialized advanced schools for professional commercial training This latter type of school is worthy of mention in that it introduces almost the university type of teaching in proprietary institutions The accountancy training schools which have grown up in recent years are a natural development of the less ambitious schools of the past From their ability to make special terms and special conditions to meet individual cases, they are placed in a class quite outside the public institutions providing a similar type of tuition To-day many of the old-established schools are offering courses comparable with the first year university work and others are organizing or re-organizing to meet the changed conditions caused by recent legislation These will eventually approximate to the secondary schools having a definite commercial bias and there is a prospect of the best managed of the private schools receiving definite recognition in the scheme of education which will under the Education Acts be submitted by local education authorities to the Board of Education

In the United States of America the position that private commercial schools occupy is an exceedingly strong one Recently however the setting up of schools by the large corporations for the training of their own staff has raised the question as to their future but it has been pointed out that specialized staff training is training on definite lines for a particular type of work peculiar to a particular business, whilst the work of the private schools like the work of the English commercial schools has been of a more general nature and will continue to be so

The attitude of the American public will be seen in the statement of President Garfield who said that Business Colleges furnish their graduates with a better education for practical purposes than Princeton Harvard or Yale and another famous American declared that Whatever vocation you may choose as your life work there can be no question that the first step is to obtain a practical business education ' In each case the speaker had in mind the private commercial schools of the United States R W H

PRIVATE SCHOOLS ASSOCIATION (INCORPORATED) —In 1879 a meeting of some sixty head masters of private schools took place at the Holborn Restaurant when it was resolved to form an association to increase the efficiency of private schools generally This they sought to accomplish by conferences by inviting experts in various departments of education to address their meetings by informal inspection of schools conducted by members and by the establishment of a journal to record the proceedings of the Association and afford opportunity for further exchange of views

The *Educational Times* in an article on the new Association said that " private schoolmasters had almost wholly in their hands the training of the mercantile and trading classes besides in most cases that of the bulk of our professional men ' The justice of this claim was subsequently substantiated when a Government return of the number of pupils in secondary schools decisively established that more than half of the secondary education in this country was at that time given in private schools

Organisation. Those who controlled the Association were anxious to confine its membership to the heads of really efficient schools Meanwhile the Association had no wholly satisfactory method of discriminating between schools and has never since evolved one For this reason and from a desire to purge the teaching profession of unqualified pretenders the Association from the first strongly supported the movement for the

registration of teachers, which has recently come to fruition

Private schoolmasters are independent and isolated units Few men combine so many functions, or are so completely absorbed in their work Among the best of them many are unwilling to spend their precious time in educational conferences and feel no need of a defensive organization The efforts of the Association to include as members all private teachers of good standing have on this ground met with only partial success and the Association claims to speak merely for the majority of such teachers though voicing generally the ideals of a still larger number

Since 1906 it has rapidly gained in efficiency and in public estimation Its members have been at one on questions of policy the utmost cordiality has existed between members of the Council its debt has been extinguished it has taken a worthy part in contemporary educational movements and its membership has for some years been steadily rising

The Association is managed by a representative Council each branch nominating a representative Members of the Association who are not attached to a branch elect their representatives at the annual general meeting While the Council deals with matters of general principle it refers to an Executive Council all matters of detail The Chairman of the Council is the chief executive officer and for the sake of convenience the registered offices of the Association are at his residence *Secondary Education* the organ of the Association is published six times a year In this journal all the important pronouncements of the Association are to be found

General Policy During the last decade, the energies of the Association have been almost entirely given to a defence of educational liberty "Freedom variety and elasticity are and have been the merits which go far to redeem the defects in English education and they must at all hazards be preserved These words from the Report of the Royal Commission on Secondary Education embody the spirit of the Association and determine its attitude towards all the important educational movements of the day It makes on behalf of private schools no claim which was not urged on the nation by the Royal Commission in the interests of educational efficiency The establishment by the State of many secondary schools the surrender of their independence to the State by almost all previously existing schools and the tendency of teachers to look for educational efficiency almost solely to State coercion make it of supreme importance that a few schools at least should stand—as advised by the Royal Commission—outside the State system with absolute freedom to adopt or ignore the current educational ideals of the day For this reason while the Association commends to its members the advantages of advisory inspection it urges them to decline public subsidy and State recognition

No one is so deeply interested in the extinction of inefficient private schools as the efficient private schoolmaster In common with other teachers he dislikes them as elements of national weakness and as illegitimate competitors, but he also dislikes them for the disgrace which they tend to bring on private schools generally In no direction is the Association so much tempted to invoke State discrimination as in this matter, but it feels certain that only schools which are really efficient can long survive the crushing competition of schools which are able, by the receipt of public funds, to provide education far below cost

The Association shares with the Royal Commission the ideal that "no child who is capable of benefiting by the full course of school education should miss the opportunity by reason of poverty," but it objects (with the Commission) to "wasting money in paying fees for well-to-do people who are perfectly well able to pay for their own children" It has repeatedly urged that under present conditions, the State is, in many cases merely subsidizing parents willing to educate their children at the expense of other people Mr Harold Cox and the late Lord Avebury were the chief Parliamentary exponents of the Association s views on this and other educational questions Recently these views have been upheld in Parliament by Sir Philip Magnus Sir Joseph Larmor Mr Rawlinson, Mr Marriott, and Sir Henry Craik

The overwhelming testimony of history—religious, social, and educational—is that attempts by the State to coerce individuals into conformity with its views have ever been the chief hindrance to human progress that in no department of life is liberty more vital than in education that qualified teachers should be as free from State and professional control as medical practitioners and that real progress has always been the result of equal competition The Association has long pointed to the German educational system as typical of the manner in which the mechanical efficiency resulting from State organization is secured at the expense of every spiritual element annihilating the individuality of both teacher and pupil, destroying originality and paralysing moral sense It views the present organization of English education with grave apprehension feeling that the uniformity to which this tends will destroy the vitality of the system on which national and individual welfare alike depend F A S

PRIVATE TUTOR (or COACH) —A college tutor has charge of a group of undergraduates or of graduates taking a further course of study He must share his attention and care without partiality among the members of his group Should any disagreement arise between a college tutor and his pupils the case would be decided by the college authorities

A private tutor enters into a private contract with each pupil He makes private arrangements as to the time to be devoted to lessons The coaching often takes place with the full cognizance of the college authorities Indeed there are, at Oxford and Cambridge many men who are invited by college tutors to undertake the private tuition of undergraduates the usual fee is paid by the pupil to the college and by the college to the private tutor who of course, receives no other recognition from the college than this transferred fee By this means of controlling the selection of private tutors the evils of a system of absolutely uncontrolled "crammers" are avoided, while at the same time, pupils who need additional assistance to enable them to pass examinations are guaranteed the help of qualified teachers A C C

PRIVATE VENTURE SCHOOLS.—(See BOARDING SCHOOLS)

PRIZES.—(See REWARDS AND PRIZES)

PROBATION OFFICERS.—(See CHILDREN'S COURTS)

PROBLEM, A.—This is a question proposed for solution The term was first used in geometry by Pappus in the third century before Christ in contrast to the theorem which was a proof of an established principle It is now applied more widely to a vast number of questions in all branches of mathematics, as well as to the solution of difficulties in life apart from studies In the study and in the teaching of the early stages of mathematical subjects, especially in arithmetic and geometry the problem is very valuable since it can clothe the subject with an interest that cannot be found in abstractions From early times arithmetic was chiefly a question of problems connected with daily occupations the counting of men and animals the computation of distances and the exchange of money The early schools of England used the Bible as a reader and founded problems on its statistics Even in the arithmetic of the nineteenth century schools of the National Society the Bible was used in this way The twentieth century has seen a rapid development in the useful problem and the problem of local interest The text books for teaching beginners now include specialized problems adapted to train the learner for the arithmetic of every class of industry and of domestic life

PROCESS —A series of motions or changes going on in any physical body as the *process* of nature which denotes the normal and regular manner of activity in natural bodies An educational *process* is a series of motions or changes leading to a desired end

PROCLUS (A D 411-485) —The Neo Platonist was a student of Platonic and Aristotelian philosophy at Alexandria and afterwards a pupil of the professor Plutarch at Athens His vivid imagination and enthusiastic temperament led him to believe in apparitions of the gods and to convince him that he was a chosen link in the chain by which the revelation of the divine will reaches mankind In his system known as neo Platonism the law of development is threefold (triadic) All things develop by the continual repetition of three moments (1) existence is the source which produces them (2) emergence from the source (3) return to the source The absolute source of this development is the original essence elevated above all being and knowledge but connected with them by the intervention of a number of intermediary demons and gods

PRODIGY —Defined by Johnson as something out of the ordinary process of nature and astonishing, whether good or bad A mental prodigy is a person who is capable of astonishing mental performances with less training than the average person requires In education the prodigy is a precocious child who is capable of reaching a state of proficiency much above the normal The precociousness is a natural gift and is encouraged by training It is a problem for the teacher to determine to what extent the precocious child should be pushed forward Precocity has often been allied with a weak constitution but there appears to be no reason for concluding that early precocity will lead to later physical or mental failure The chief danger arises when a child is gifted in one direction only such as music or drawing and other branches of education are sacrificed to promote proficiency in one subject

PROFESSIONAL EDUCATION FOR GIRLS.—(See GIRLS' EDUCATION AS AN EQUIPMENT FOR LIFE)

PROFESSIONAL ETHICS AND ORGANIZATION.—It is unprofessional for a teacher—

(1) To teach as objective truths any statements that are untrue or doubtful

(2) To allow without protest the interests of art science morals etc to be sacrificed by Press Theatre Church State etc

(3) To use slighting words or to show personal indifference in respect of matters of culture

(4) To allow a child to fall into a preventable bad habit or a dangerous delusion

(5) To apply for a 'higher post apart from an inner call to it

The above is an attempt to remove the reproach contained in Mrs Sidney Webb's monograph on teachers organizations that no mention is made in teachers professional code of 'actions affecting the interests of the children or the public That the first two clauses alone would cause an educational and social cataclysm is not necessarily a valid argument against them

There is a mass of capacity and devotion in the ranks of our teachers and bureaucrats There is little initiative little professional vision little moral courage Ideas come from outside and even the implications of ideas that have lodged themselves "inside are rarely grasped It is broadly true that professional educationists are not recognized and hardly recognize themselves as stewards of the nation's culture inheritance of science art and morals On every hand they make *il gran rifiuto*

The justification of professionalism against the strictures upon it is twofold (1) professionalism as a form of specialization is the only means of getting semi-routine things efficiently done (2) professionalism may build up a code of ethics capable of giving purpose and grandeur to life 'I have done my duty means except for the genius or pioneer 'I have obeyed my code of professional ethics that we have sometimes to add "at the expense of humanity does not alter the broad fact though it does point to the need of improvement in professional codes

Professionalism of the Future There are two possible forms of future professional administration (1) direct State service under bureaucrats appointed from above (2) professional autonomy granted by the State under certain safeguards Whichever be the better there are certain measures which teachers should at once undertake if their profession is not to become a 'resort of third rate men'

They should thrash out more successfully than their official superiors the meanings of our educational categories Until for example the distinction between the inspired or charismatic function of the teacher and his routine or statutory function is established such categories as "self-activity religious education etc are merely word traps yet there is not a scrap of available clear thinking on this topic They should become genuinely "learned men" on subjects like heredity and evolution as well as on their classroom themes

They should know their own master-craftsmen and reward them at present it is the ablest public speaker not necessarily the cleverest teacher, who obtains N U T honours Above all teachers should thrash out the question of their own prospects and promotion for a profession that cannot do this will hardly convince the dispassionate that it can do subtler and grander things (See also the following article) F H H

PROFESSIONALISM, THE PATHOLOGY OF — The footsteps of professionalism have been so dogged by pride sloth and delusion that the following sinister propositions may be formulated and supported by illustrations—

1 Although professionalism exists for the purpose of achieving certain desirable ends (health justice morals education etc) it is frequently the worst enemy to the realization of those ends

2 Professionalism tends to confuse means with ends it seems to regard its own interests not those of humanity as of supreme importance

3 Professionalism seeks to acquire power privileges and emoluments for itself

4 Professions support complicated technique and tend to create doubtful useless or even mischievous work in order to justify their existence

5 Professionalism tends to develop humbug, jargon or pedantry and to lose contact with life

6 Professionalism while claiming that its own system is well nigh perfect strongly objects to this claim being put to the test by the community

7 Professionalism objects in particular to lay criticism or superintendence and even to criticism and superintendence by its own most competent members It prefers to shroud its doings in a semi secrecy which is destructive of definiteness and responsibility

8 Professions seek to rebut criticism by a policy of self praise which may become fulsome panegyric One form of this is to make exaggerated claims for what the profession has achieved in the past another is to assert the hyper conscientiousness and 'honourableness of its members

9 Panegyric may be carried to the extent of denying that the laws of human nature apply to the profession in question Thus the law of habit may be held not to apply and the law that men (*e g* judges) aged 70 are *primâ facie* not likely to be so efficient as men aged 40 may also be denied

10 Eulogies are not however commonly forthcoming when proposals are made to impose new duties on a profession Self depreciation often revealing a fundamental cynicism and lack of interest in the profession s work may then be the order of the day

11 The most serious charge (except perhaps (1)) that can be maintained against a profession is that 'ideas come mostly from without' The vast majority of professional men contribute nothing to improve the work to which they devote their lives

12 Professions tend to be unchivalrous or cruel towards the weak deputed to their care, and particularly towards their own young innovating members and original minded innovators outside the ranks

Space prevents detailed demonstration of these propositions further they do not state the entire truth But even in this bare unqualified form they direct attention to serious and unsolved problems of national organization The two professions with which this Encyclopaedia is specially concerned are those of teacher and of educational official What should be the relations of these two to each other, and to the lay community is a question to which hardly any serious attention has ever been given For a few aspects of it, briefly considered see the articles on the PROMOTION OF TEACHERS and on EXAMINATION AND INSPECTION F H H

PROFESSOR —A professor is a teacher of the highest rank in a university He is usually an eminent scholar in that branch of knowledge upon which he lectures but there is no guarantee that he is highly qualified as a teacher

The duties of a professor are not clearly defined At Oxford and Cambridge he is purely a university officer so far as his professorship is concerned By the conditions stated in the benefaction from which his income is derived he may be required to deliver lectures and he may be required as are the King Edward VII Professor of English Literature and the Arthur Balfour Professor of Genetics to adopt other means to awaken and direct public interest in his subject

At Cambridge it is required that all professors shall reside in the university This means either that the professor must live within a mile and a half of Great St Mary s Church and not habitually be away from home more than two nights a week, during that part of term known as 'Full Term or he must reside within five miles of Great St Mary s Church and spend two hours between 8 a m and 6 p m in Cambridge on each of five days a week during Full Term and be reasonably accessible on at least three days a week

It is to be noticed that though a professor is required to deliver lectures no one is compelled to attend them In the vast majority of cases the audience contains as large a proportion of cognoscenti as can be expected in view of the multitudinous interests of the intellectually alert members of the university

An analogy with the medical profession will perhaps make the situation clearer If teachers in schools are regarded as general practitioners a university professor is to be regarded as a consulting physician That is why he must be 'reasonably accessible'

Most professors are appointed by a board of electors In a few cases the appointment is made by the Crown or by individuals not deputed by the university The whole question of appointment tenure and salaries of professors is so complicated by "historical accidents" that it is well nigh impossible to generalize However if a certain elasticity is exercised in interpreting the rules it may be said that the appointment of professors is generally made by the governing body of the university in the sense that the selection of a suitable man is made by a board or committee charged by the governing body with that duty

The tenure of a professorship is usually for a specified number of years or for life In 1913 however several professorships ceased to be tenable for life (Change of statute approved by the King in Council 5th May 1913) The object of the change seems to have been to increase the power of the governing body of the university by making it easier for it to replace a professor unable to discharge his duties effectively Arrangements for superannuation on a satisfactory scale have been under consideration for some time

Occasionally in accepting the resignation of a

professor the governing body has conferred upon him the title of *Emeritus Professor* and where necessary has granted a pension This plan is obviously more satisfactory than an uncontrolled life tenure

The salary of a professor ranges from £300 to £1 500 or more The two recently-established professorships mentioned above are supported by an endowment fund, on conditions that the professor shall receive the income from the fund if that income does not exceed £800, and that if the income from the fund exceeds £800 he shall receive only £800 This would appear therefore to be regarded as a standard salary for a professor at the present time It is intended to be sufficient to support him while he engages in the research which is his proper function

The value of the professor as a teacher lies in his ability to inspire and inform those who are engaged more definitely in the task of teaching in the university

In the modern English universities the professor discharges the duties of a college lecturer and of a college tutor in many cases The difference in the size of the university often accounts for this

Assistant Professors These are appointed by professors with the consent of the Vice Chancellor for periods not exceeding five years Their duties are sufficiently indicated by the title of their office

A C C

PROJECTIVE GEOMETRY, THE TEACHING OF —Geometry the oldest of the exact sciences is probably contemporaneous with the great pyramids that stand sentinel over the graves of the Pharaohs From Egypt the crude beginnings of geometry passed to the Greeks The works of Euclid on the straight line and circle and of Apollonius on the conic are glorious monuments of Greek culture and progress When the Dark Ages closed over Europe these treasures were preserved in the palaces and mosques of the Arabs At the Renaissance when man again yearned for knowledge and learning Copernicus and Galileo sought the truth in the universe and the broken path of progress was renewed At last in the course of time the study of geometry fell into the hands of a brilliant group of French mathematicians who early in the nineteenth century laid the foundation of what for want of a better title may be called Projective Geometry

Splendid as was the work of the Greek geometricians they failed to realize the generality and extent of their discoveries The general principle is often lost in the consideration of the particular case It is to the broad principles to the all pervading symmetry that the teacher of projective geometry must appeal if he is to place his subject before his pupil in its most attractive form

After the elementary properties of triangles and circles and the theorems of geometrical proportion have been mastered there is no reason why the pupil should not commence the study of projective geometry Assuming that he knows the sign formula for lengths and perhaps some trigonometry a consistent system of notation should be explained to him

Notation. Undoubtedly the best system is to denote points by capital letters as A B C X straight lines by small letters as *a b c x* and planes by Greek letters as $\alpha, \beta, \gamma \delta$ In this notation, the line joining the points A and B is AB, and the point of intersection of the lines *a* and *b* is *ab* This leads at once to the great **Principle of Duality** first laid down by Brianchon which should be taught from the first Whenever a theorem has been proved the student should be required to write down the correlative theorem When the principle has been mastered he will find that the work before him has been reduced by half Thus pencils and ranges are found to be exact counterparts of each other and the theorems connected therewith to be only correlative statements of the same facts

Projection in a Plane The next step is to prove that a pencil is cut by all transversals in equi anharmonic ranges such ranges being termed projective ranges Too much attention cannot be paid to anharmonic ratios and their properties in the whole field of pure geometry there is no more powerful weapon As a particular case the properties of harmonic ranges should be considered the case in which one of the points is at infinity being carefully noted The harmonic properties of the quadrangle and quadrilateral the properties of triangles in perspective Ceva's and Menelaus's theorems can all be easily obtained by the use of the anharmonic ratio

By considering two projective ranges on the same base the properties of an involution are obtained It will probably be best to defer the *full* consideration of its numerous and important properties

At this point the road divides and it would be presumptuous to say which is the better way

The Anharmonic Ratio By its use the great theorems of projective geometry may be easily proved in an almost identical manner alike for the circle and for the conic in general This method has many advantages and it does not require the consideration of figures in space Still there are certain points which are made clearer by employing conical projection

Conical Projection The great theorems being first proved in particular cases for the circle are by projection generalized for the conic The circle is seen to be only a particular case of the conic the locus of all points at infinity in a plane is a straight line—the line at infinity all parallel straight lines meet at a point on this line By choosing properly the centre and plane of projection it is shown that any line in a plane can be projected into the line at infinity in another plane and that two angles can at the same time be projected into angles of given dimensions

Fundamental Theorems The attention of the pupil should be concentrated on these five great theorems (1) The anharmonic property of the conic (2) the property of Pole and Polar (3) Pascal's theorem (4) Carnot's theorem and (5) Desargues's theorem Each of these has its correlative theorem and each—with the exception of the Pole and Polar theorem—has a converse for both the theorem and its correlative Hence each theorem really represents four theorems From these innumerable particular cases and deductions can be derived which contain the most important properties of the conic These great theorems are the landmarks of the geometry of the conic When these are mastered the rest of the work is simple

Geometrical Correspondence. This is a very powerful method but it requires care in handling It is hardly desirable for a student unacquainted with the more direct methods to use it

Circular Points at Infinity. It has been said that many university students have no other idea of projective geometry than to project a pair of real points into the circular points at infinity, and thence to deduce properties of real points It is more than doubtful whether there is any system of geometry that justifies such a process The projection which projects a pair of real points into the circular points at infinity will at the same time project almost every real point in the plane into an imaginary point

If the methods referred to above are followed, and the student s attention is concentrated on the great principles and theorems of the subject geometry may be made a fascinating study It is no longer a burden to the memory or a register of facts important though disjointed It is a record of broad principles and an explanation of the symmetry that pervades the universe

J L S H

PROMOTION EXAMINATIONS —The internal school examinations by which promotion is determined are on the whole conventional and unsatisfactory Their chief faults are—

1 Confinement of scope to a single term s work The result is an appearance of exaggerated success If a few " revision " or " back-work " questions were set, the percentage of marks would, in all probability, sink considerably

2 Confinement of scope to questions involving memory rather than intelligence Memory tests are necessary but should not be too predominant

3 Illogical assignment of marks In many schools the same maximum is assigned for writing arithmetic, geography English map drawing and a dozen other subjects all varying very much in importance

Obviously so long as the promotion of children is mixed up with the promotion of teachers there must be timidity on the part of head teachers The question of teachers promotion needs a drastic overhauling before many educational questions can be solved (See also EXAMINATION AND INSPECTION) F H H

PROMOTION OF TEACHERS, THE —Our system is incredibly slipshod and in some areas little short of corrupt A body of laymen is deputed to select from among several hundred assistant teachers a limited number to occupy the posts supposed to be " higher," of head teachers Even assuming that the laymen have devoted time and study to the factors, at least twenty in number that should be decisive in such cases they have hardly any means beyond (1) inspectors reports (2) casual visits to schools (3) five minute interviews with candidates in a committee room to determine the existence of any of these twenty factors in the individual The broad result is that in some districts promotion to headships goes by bounce wire-pulling relationship or chance while in others it goes by a system of genuine but unco-ordinated " points " among which two—paper qualifications and attractive manners—often turn the scale

Suggested Lines of Solution. The following questions will indicate possible lines of advance—

Is it sensible to drain away the best class teachers by " promoting " them to headships ? Are not the business qualities desirable in head teachers officials, etc , far more common (and commonplace) than the qualities of good class teachers ? If so, why should these qualities be more highly rewarded ? Ought not the posts of class teacher, head teacher, and official to be more interchangeable than at present ?

To ask these questions is not to answer them, but answers may shape themselves if facts like the following are kept in view—

1 Ten years experience " of a certain kind of work is usually better than thirty

2 " Over-inspection " is better than " under-inspection," if teachers desire their best men to be promoted

3 The N U T policy of diminishing the number of records of class teachers' ability, or of merging such records into complaisant and identical panegyrics, plays directly into the hands of luck, arbitrariness, and officialism

4 A committee interview is a useful device for ascertaining some personal qualities of a candidate, and it should carry " marks ', but it should not as at present carry a veto also

5 Paper qualifications are no guarantee of teaching skill but they are a better guarantee than absence of such qualifications, unless the absence is due to artificial barriers

6 If the present ideas of " promotion " are to hold good there is a case in favour of compelling all would be head teachers and officials to pass a higher examination than that for the certificate, It should include advanced psychology, administration, statistics etc

7 The teaching profession itself might be given certain powers of appointment in some of the schools of Zurich the class teachers elect an annual head in France, teachers have secured co ordinate power with inspectors in matters of promotion from their ranks

The whole art of selection and promotion is in its infancy No better evidence of this fact can be given than that in one city, where corruption, nepotism and other administrational vices are probably less in evidence than in any other city in the world the director s personal knowledge of a candidate and confidence in him appear to have carried great weight time after time with regard to certain posts Such a system is probably the best available , but it is after all, a confession that the machinery of testimonials interviews, etc , has broken down F H H

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PRONUNCIATION OF ENGLISH —Speaking generally there are three types of English pronunciation Scottish Northern and Southern (or standard) English This classification refers only to educated speech there still remain among the common people no fewer than six dialect divisions Lowland Scottish Northern Midland, Western, Eastern and Southern English

In educated English, whether Scottish Northern, or Southern there is comparatively little difference in the pronunciation of consonants In Scottish English the *r* is commonly trilled (that is, produced by the vibration of the raised point of the tongue against the upper gum) but less so when followed by a consonant (as in *warm*) It is slightly trilled in Northern English, in some parts, it is trilled, whether used initially finally or before a consonant, in others, it becomes weak when used finally or before a consonant, or disappears as a separate

letter, its only effect being on the preceding vowel which it makes *coronal* (A coronal vowel is produced with the tongue-point raised in the position required for the trilled *r*, the two sounds therefore, coalesce Coronal vowels are becoming rarer as education improves) In Southern English the *r* is only pronounced initially, as in *real*, or between a consonant and a vowel, as in *brown* or between two vowels the second of which is pronounced as well as written as in *very*

Southern English uses the sound of *w* indiscriminately whether the spelling be *w* or *wh* Scottish and North of England speakers sound the *h* in *wh* either as the voiceless [ʍ] (the phonetic transcription of *wh*) or as *hw*

Vowel Sounds Greater differences occur in the pronunciation of the vowel sounds Several of the vowels in Southern English are split or diphthongal There are two distinct sounds in the vowel sound of *made* as pronounced by a Londoner but only one in the Scotsman's version The Northern English vowel in *made* is only slightly diphthongal Different elements compose the diphthong in different latitudes In the speech of the educated Southerner the first element is the vowel sound of *bet* (phonetic transcription [e]) but the 'Cockney' makes the first element the long *a* of *father* followed by the vowel sound in *bit* (phonetic transcription [a ɪ]) Note also the diphthongal character of the vowel in *cloak* in the speech of the Southern Englishman becoming less marked in the speech of the Northern Englishman and disappearing altogether in the speech of the Scotsman

Before *n f s* and *th* the letter *a* is pronounced differently according to the latitude In Southern English the initial vowel of *answer* would be pronounced as in *father* (phonetic [ɑ]) in Scottish English as in *bat* (phonetic æ]) and in Northern English as in the first vowel of *traveller* (phonetic [a]) The vowel in *pen* and *get* is yet another shibboleth the Southern [e] changing in the North to [ɛ] the first vowel sound in *fairy* the difference being accounted for by the lowering of the tongue The Scotsman distinguishes as the Southern does not between the vowels of *four* and *for horse* and *hoarse* and lengthens the vowel in *book* The speech of the Scotsman or of the Northern Englishman displays marked difference in stress and tone inflection as compared with the speech of the Southern Englishman

Of the three varieties Scottish English is believed by phoneticians and by foreigners generally to be the most musical the pure vowels and trilled *r* producing a clearer and more vigorous utterance Southern English is however the standard form as far as there is a definite standard in English It is the speech of the ruling classes of the Universities of Oxford and Cambridge and of educated London and as London is the capital the home of the great publishing houses and the literary centre of the Empire there is little likelihood that a different standard will be adopted

Changes in Pronunciation A contributory cause to carelessness in speaking is the irregularity and inconsistency of English spelling which has ceased to give a phonetic record of the sound of words In a language where sound and symbol were more closely allied the sound of the word would be conveyed to the consciousness of the pupil as he read or wrote it and English pronunciation could be taught largely by the indirect method Phoneticians aver that the present tendency of English speakers is to neutralize vowels into the sound represented phonetically as [ə] (the second vowel sound in *better*) and to weaken all unstressed vowels

There was little attempt in England to set up a standard pronunciation until the eighteenth century In the thirteenth fourteenth and fifteenth centuries very marked discrepancies prevailed

Before the sixteenth century," says A J Ellis 'it is almost a straining of the meaning to talk of a general English pronunciation There was then only a Court dialect of the South and the various upland Northern Eastern and Western modes of speech Marked linguistic changes took place in the fifteenth and seventeenth centuries where the frequent wars brought about an extraordinary commingling of the different classes of the population In the eighteenth century arose the dictionary makers whose work naturally lessened the tendency towards rapid sound change For a time however the only indication of pronunciation was the accent of words which was first marked in the *Universal Etymological Dictionary* (published in 1721) It was not till 1773 when William Kenrick published his dictionary that there was any attempt to indicate vowel sounds

There have been no radical changes in English pronunciation since the eighteenth century although the rhymes of Pope tell us that *tea* was *tay*, *join* *jine* and *obliged* *obleeged* and the confidences of Samuel Rogers that there was some difference of opinion as to which syllable should be stressed in *balcony* and *contemplate* The general tendency is to lessen sound change and to obliterate divergencies due to class As it is impossible to represent the sounds of the English language with absolute accuracy without the use of phonetic symbols the alphabet of the International Phonetic Association has been drawn upon for purposes of illustration but the explanations bracketed will it is hoped make the symbols intelligible even to those unfamiliar with the alphabet C M

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PROTAGORAS (*c* 480–411 B C)—A native of Abdera in Thrace and the first Greek philosopher to call himself a sophist He taught at Athens for the space of forty years and received high fees from his pupils His system based on the speculation that 'man is the measure of all things aimed at the training of men for the duties of citizenship in a Greek State He was banished from Athens for expressing in his book on the gods a doubt of their existence

PROTECTION OF BIRDS, THE ROYAL SOCIETY FOR THE—This was founded in February 1889 and incorporated under royal charter in November 1904 It was called into existence by the ruthless destruction of birds especially those with ornamental plumage which was carried on all over the world in order to satisfy the demands of fashion in millinery A steady protest against this destruction has always occupied a foremost place in the Society's programme but its sphere of work now includes the protection of wild birds generally

The work of the Society is carried out in many ways It promotes improved legislation and the enforcement of the law, it secures or amends county council orders and employs travelling inspectors to prevent and to discover breaches of the law It endeavours to educate the young and to influence popular opinion in favour of the protection of birds

The number of species of British birds is said to be about 380 and of these about 270 are or were residents or regular visitors to our islands Scarcely more than 200 can really be called British birds to-day It is to prevent a further decrease that the Society directs its efforts It puts the enemies of birds into five principal classes There are those who destroy for destruction s sake—the thoughtless boy robbing nests the youth with a gun the Cockney ' sportsman then comes the bird catcher who has robbed England of thousands of larks linnets gold finches and bullfinches and adds to his crime by the subsequent ill treatment of the caged victim thirdly the gamekeeper who is responsible for the extinction or extreme rarity of most of the large British birds fourthly the private collectors with a craze for rare eggs or stuffed specimens and lastly the trader and the woman interested in feathers for clothing

Since an Act of 1880, much restricted in scope, the activities of the Society aided by its Members in Parliament have secured further Acts for bird protection on five separate occasions These Acts have given to county and borough councils power to protect any species of bird wholly or partly to protect eggs to set apart protected areas and to forbid Sunday bird catching Magistrates have obtained power to confiscate apparatus used for illegal bird catching The Act of 1908 prohibits the use of hooks in catching birds The Society has made many personal appeals to landowners for the disuse of the pole-trap and the preservation of owls and rare birds and after the Act of 1904 made illegal the use of the pole trap further appeals were made to 3 000 landowners to see that the Act was enforced on their land

Bird-catchers can at present be dealt with only by county council orders and the Act of 1880 which the Society is striving to strengthen and an inspector has been employed to investigate bird catching methods

The Protection of Rare and Migratory Birds The Society takes steps to defend special breeding grounds of rare birds by the employment of watchers and by grants to local effort in the same direction The Watchers Committee was founded in 1902 and claims that the work of its score of specially selected watchers has already prevented the extinction of about a dozen interesting rare birds whose increase depends upon vigilant guarding in certain brooding areas in various parts of the British Isles At Brean Down in Somersetshire the Society has a carefully watched bird sanctuary where it has successfully guarded ravens peregrine falcons sheld ducks and wheatears during their breeding season

For the protection of migratory birds the Society has promoted the erection of bird rests and perches on lighthouses an enterprise which has proved a great success and attracted great attention and sympathy The first lighthouses to be thus fitted up were St Catherine s Isle of Wight the Caskets off Alderney the South Bishop off Pembrokeshire and Spurn Point Yorkshire Lighthouse keepers report how valuable the rests are when at night thousands of little birds of many species huddle together thickly wherever places can be found, waiting for the dawn The autumn passage birds include thrushes, redwings blackbirds, robins, wrens skylarks linnets goldfinches snipe, plover, and rails

" Bird and Tree " Competitions The educational work of the Society is promoted by the award of silver and bronze medals, and prizes for essays written by pupils in public schools and by the ' Bird and Tree " Competitions in elementary schools

In the Bird and Tree (Arbor) Day Competition, children undertake to study selected birds and trees, and are registered as R S P B cadets A team of nine cadets is formed in each school, and each member is required to write one essay on the tree, and one on the species of wild bird selected for study The essays are sent to the Society on 1st September, and the awards include county shields books on natural history to school libraries and books to members of teams In the case of schools obtaining prizes or certificates the local committee arranges for the celebration of a Bird and Tree Day Festival

Any persons interested in promoting the objects of the Society may be enrolled as follows Fellow, by subscribing one guinea annually Member, by subscribing five shillings or more annually Associate by subscribing not less than a shilling annually

Fellows and Members receive free every publication issued by the Society

The organ of the Society is *Bird Notes and News* issued quarterly The *Annual Report* contains very full information on the state of the law in regard to the protection of wild birds and a list of the numerous publications of the Society

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PROTOPATHIC SENSATIONS —(See CUTANEOUS SENSATIONS PSYCHOLOGY [EXPERIMENTAL])

PROVERBS —" The wisdom of many and the wit of one " (Earl Russell) Proverbs are short sentences containing popular ideas that have long been accepted as true by common consent They are brief, and for that reason easily remembered, and it is essential that they should be of general applicability It is impossible to trace proverbs to their origin, for they have been in use time out of mind and are not merely the sayings of wise men They have passed from the family to the nation, and from one nation to another some have become national and others universal David quotes a " proverb of the ancients (1 Sam xxiv 13) and the sayings of them of old time in the Sermon on the Mount testify to the antiquity of some that were common among other races besides the Jews

PROVINCIAL UNIVERSITIES. — (See CIVIC UNIVERSITIES)

PROVISION OF MEALS ACT.—(See DIET OF PRIMARY SCHOLARS THE)

PROVOST, THE —He was originally the chief dignitary in a cathedral or collegiate church, and still in some cathedrals is the officer who presides over the cathedral chapter In the Scottish Episcopal Church the title is used, but in the English Church the dean is the chief officer in the

cathedral and the archdeacon is head of the cathedral chapter In some of the oldest Oxford colleges, the ecclesiastical titles of the heads still remain and at Oriel (1326) and Queen's Colleges (1346), as well as at the modern Worcester College (1714), the head is called the provost

PSYCHIATRY.—This is the study and treatment of mental diseases A psychiatrist is a specialist in mental diseases, and studies chiefly the cases that require special treatment in institutions for the care of the feeble minded and the insane Mental diseases are studied and classified according to similarities of symptoms and of the causes which excite or produce the symptoms The result has been the classification of mental diseases in general groups, such as dementia hysteria melancholia mania neurasthenia epilepsy and insanity Many of these diseases originate in early childhood and the present system of medical supervision of schools is an important instrument in providing treatment which may check or remove the symptoms before it is too late

PSYCHIC (or mental) —This is a term used to indicate a conscious process as it is apprehended by the mind itself

PSYCHO-ANALYSIS —A therapeutic method that has been developed during the last thirty years by Professor Freud of Vienna Working in the first instance with Dr Breuer upon hysterical patients, he found that the recital of their dreams had a marked effect upon the symptoms of these nervous patients Further experience led him to conclude that dreams and neurotic symptoms had a common origin in the unconscious mind and that both were disguised fulfilments of repressed wishes of a sexual and infantile character The analysis of dreams led him repeatedly to the same experiences upon the uniformity of which he ultimately based his epoch making theories of neurosis and the unconscious mind He found that neurotic symptoms can always be traced back to erotic impulses of which the sufferer is unconscious He falls ill at the moment when he can no longer adapt to the demands of the external world and the symptoms are surrogates or the infantile repressed wishes which his conscious personality cannot allow him to express

The unconscious mind is conceived as all those mental processes of which we are unaware at a given moment Some of these processes have been in consciousness before and can easily be brought into consciousness again (the Foreconscious) others cannot be brought into consciousness without some special technique such as psycho analysis or hypnotism (the Unconscious proper) The unconscious mind owes its existence to *repression* which has taken place in the interests of civilization (phylogenetic origin) throughout the ages This repression is repeated in the experience of each individual in the course of social education (ontogenetic origin) The function of the unconscious mind in Freud's view is to *wish* so that every evidence of its activity is regarded as an expression of an unconscious wish It is conceived as surviving unchanged and intact, in every adult person Its infantile and primitive character is so incompatible with the civilized personality that he has a great *resistance* or instinctive opposition to allowing its contents to become known to himself These contents, however, have a dynamic tendency to enter consciousness and appear in the form of phantasies and dreams, neurotic or psychotic symptoms, or in common everyday mistakes, such as absent-minded acts, slips of the tongue or pen *A Censor of Resistance* is postulated this is a personification of the repressing forces, which forbids direct expression of the wish, so that this wish can only appear in a distorted symbolic form The effect or emotion belonging to one idea is displaced on another (See DREAM ANALYSIS) This *transference* of emotion from one idea to another is also typical of neurosis and it becomes the chief mechanism of the analytic cure In the course of treatment by means of this transference the physician serves as a catalytic for the unconscious infantile sexuality The tender or hostile feelings which were originally given to the parents as the first love-objects (and which still exist unchanged in the unconscious mind) are now projected on to the physician Hitherto they were projected on to the symptoms or to persons in the environment What is unconscious always tends to be projected These projections are analysed and made conscious by which means the *libido* (psychic energy Jung sexual hunger Jones) which was formerly unconsciously at the disposal of the infantile sexual phantasies is now placed at the service of life or reality itself and can be *sublimated* that is can be applied to a non sexual or otherwise useful purpose more in harmony with the adult personality

It is not to be supposed that theories so subversive of our former psychological ideas would be accepted in their entirety without criticism or modification The only criticism that has real value must of necessity be based on an intimate contact with the unconscious mind through the method of dream analysis which we owe to Freud s genius

Its Development by the Swiss School. The most important developments have been contributed by the Swiss School under the leadership of Dr C G Jung In his view the unconscious mind is not merely the result of repression Instead of speaking of the foreconscious and unconscious he divides it into personal and impersonal contents

The *Personal Unconscious* contains the repressed materials of a personal nature which are valid for the individual alone and which are the acquisition of the individual life and comprise the infantile reminiscences In addition to the repressed materials there are psychic contents not yet ready for consciousness which arise from new combinations of the existing materials These have an energic value which can carry them into consciousness when required

The *Impersonal or Collective Unconscious* comprises the instincts and archetypes of apprehension or intuitions of ideas Just as the instincts compel man to a conduct of life which is specifically human so the archetypes coerce intuition and apprehension to forms specifically human ' (Jung) Here the race memories and images are potentially stored as primary propensities and forms of thought and archaic symbols, capable of being stimulated into existence in response to some outer need or inner necessity This is the myth-making or primitive mind What belongs to the personal and what to the impersonal unconscious can only be somewhat arbitrarily

defined the latter contents, however, are universal and inherited and potentially present in everyone As a result of this formulation Jung no longer refers symbolism to the work of the dream censor, but claims that it arises primordially The unconscious mind can only think symbolically, that is by representation Dream thought is an older form of thought, and is a process of comprehension by analogy The dream is compensatory to consciousness, it constellates round the unconscious conflict just as the neurotic symptoms do It indicates the existence of other standards than the rational ones and represents points of view repressed from consciousness, or not yet ready for consciousness Dreams are schemes or planes by means of which the immediate new direction is indicated they are not to be regarded as prophetic in the popular sense nor binding for any length of time but as supplying other points of view which modify and enrich those actually in consciousness Neurosis which is a failure in adaptation, shows that the libido is on the path of regression that is it is occupied with phantasies which bring about reactions in life of an infantile or inadequate type Analysis re establishes a connection between the conscious and unconscious mind and aims at restoring the libido to conscious control by detaching it from the phantasies and thus making it available for a reconstructed life The new synthesis is a resultant of the conscious and unconscious psychological processes at any given moment

Psycho analysis trains its students to bring conscious evaluation to bear upon unconscious thinking, and lays open the psycho sexual motivations of conduct Its future does not belong exclusively to the medical profession but has a marked bearing on pedagogy and education What is needed by physicians and teachers alike is a deeper psychological insight founded upon an appreciation of the enormous part played in life by unconscious emotional factors C E L

PSYCHOLOGICAL LABORATORY, THE WORK AND EQUIPMENT OF A —The aim of this article is to give a general description of the work of a psychological laboratory to a reader who has no direct acquaintance with the experimental side of psychology It may thus be of service to a teacher who contemplates introducing an experimental course into his curriculum

The Purpose of a Psychological Laboratory. The equipment of any laboratory must be dependent upon the work to be done in it The purpose for which a psychological laboratory is to be used should therefore be the first consideration

Professor Titchener in his *Primer of Psychology*, (p 26), defines experiment in psychology as "Observation made under standard conditions" Thus conceived experiment is the essential supplement to introspection and possible wherever standard conditions are obtainable The laboratory is the workshop for obtaining such conditions The difficulties of introspection are great The fleeting character of mental processes renders their description a task beyond any but the skilled observer, but if the phenomena to be described can be repeated the difficulties of description are lessened The conditions of the laboratory should render such repetition possible The whole process may be analysed into stages and attention concentrated now on one stage, now on another Further, comparison between observations and between observers, which is possible when like conditions can be established, furnishes a complement to the record of single introspections The control of the circumstances under which a phenomenon takes place, the setting up of standard conditions may in part effect the isolation of the phenomenon, and allow of the progressive elimination of accidental attendant circumstances

The laboratory may be considered (*a*) as an adjunct to the lecture-room, (*b*) as a place for research If the laboratory be considered as an adjunct to the lecture-room the student's work there will be complementary to his lecture course, and be planned in relation to it It is here he will test for himself the force of any class demonstration and translate into terms of his own experience the data and principles upon which theoretical knowledge is based He will learn how much is fact, how much assumption what is controversial, which facts are concordant with which facts opposed to a certain theory the bearing of a theory on the fundamental hypotheses and on the general standpoint of psychology

As an adjunct to the lecture room, the laboratory may fairly be expected to meet the needs of three varieties of students

There is first the *undergraduate* who is studying psychology as a degree subject He may be regarded as following a course of at least two years duration, attending the laboratory for three or four hours weekly throughout the sessions During that period he should in the laboratory acquire first-hand knowledge of the facts of sensation, appreciate the problems of the visual and tactual perception of space, study experimentally the conditions favouring economical learning and those underlying the formation of habits He should become acquainted with the forms of association and types of imagery, study the manifestations of feeling and emotion, and analyse the phenomena connected with attention and fatigue He would practise the application of the psychophysical and statistical methods to his own observations and those of his fellow students He would formulate the characteristics of individuals as inferred from mental tests (*e g* quickness of response to stimuli as measured by reaction time, acuity of the senses reliability of judgment, dexterity of movement readiness of comprehension, fidelity of memory) If the length of his course permitted it the student should make observations on animal behaviour with such small animals as can be accommodated in a laboratory He should study instinctive performances adaptability learning by experience and the acquisition of habits

A second variety of student for whom the laboratory would extend the work of the lecture-room is *the student of education* His course in psychology will probably cover only one year but during that period he should have an opportunity of studying those mental processes knowledge of which will stand him in good stead in teaching, and also of obtaining such personal knowledge of the methods of experiment as will enable him to understand and appreciate at their proper value experimental investigations undertaken in schools The trained teacher should be neither the stumbling-block of the educational reformer nor the victim of the educational crank He may well be both, if he is unacquainted with the difficulties and pitfalls of psychological experiments

As a third variety of student, one may consider

the graduate or undergraduate for whom *psychology is a subsidiary subject* The student of philosophy may be taken as representative of this group The time available for laboratory work will necessarily be short but it should be long enough for him to gain personal acquaintance with the principal facts of sensation in at least one department of sense to practise introspection in relation to imagery and association to study the intentional control of muscular activities and the phenomena of attention So much at least will serve to render the theory of knowledge and the prolegomena to ethics richer in significance

Method of Work The laboratory will fail altogether of its purpose for each variety of student if the work done within it does not increase in the student his respect for and interest in human nature There is a danger of the work becoming superficially scientific and losing the spirit which renders it one in aim with the humanities To prevent such perversion of purpose it is necessary to establish a right attitude towards experimental work In the first place in order that he may bring lecture work and laboratory work into relation with one another the student must understand the general character of the programme which lies before him for each term or session A good laboratory text book (see References) is of first rate importance as setting forth the nature of an experiment plan of operation points to be noticed precautions to be adopted but no manual can possibly place an experiment in the precise setting which is enlightening or provocative for a particular group of students This is the joint responsibility of the teacher and students concerned If it is neglected the value of the experiment may be nil

For many experiments it is necessary for the students to work in pairs one as conductor of the operations the other as subject of the mental processes to be studied—*rôles* which can be reversed It is essential that this association be viewed as real co operation partnership If either person assumes a masterful attitude towards the other good work is impossible Both are observers and on their faithfulness of record goodwill and frankness towards each other depends the value of the experiment for each If one member exhibits a competitive spirit trying to outdo the record of the other when *rôles* are reversed this emulation must be checked at once No rivalry between one group of workers and another should be permitted Free discussion between partners as to the observations made and conditions of the experiment is to be encouraged For this reason it is necessary to allow ample time for the work assigned for any period The general tendency of the beginner and the weak student is to rush through the experiments entered on his list with little or no realization of what he is trying to do To have "done so and so appears to him an end in itself To learn to regard an experimental result as the outcome of the conditions which prevailed is a lesson the psychological importance of which can hardly be over estimated especially if it is combined with an attempt to analyse these conditions Every student should be able to explain the meaning he attaches to the statement that the result of an experiment is "right" or is "wrong"

The scope of the record to be entered into the laboratory note book will vary with the grade of student and with the experiment For students in their first year it may be well to require an entry of the purpose of the experiment the material or apparatus used the method of procedure the observations of the experimenter the observations of the subject general conclusions The extent to which it is desirable to insert diagrams graphic records etc must be decided by the teacher Introspective records should be the property of each member of a partnership The use of carbon paper for such records will save labour A laboratory note book which contains no such records is worthless as a psychological document

Equipment For the purposes of this article the equipment of the laboratory will be considered in relation to its more modest function viz serving as an adjunct to the lecture room Such equipment will serve also to provide for much useful research

A minimum requirement as regards rooms in addition to the lecture room would seem to be one large sized room for general laboratory purposes say 30 ft by 30 ft one smaller room available for undisturbed work say 14 ft by 12 ft one small room available as dark room say 10 ft by 10 ft To this minimum one could add in various ways a workshop another and larger dark room with adjustable lighting a sound proof room a reference library and record room small rooms for partnership work The general room might be replaced by separate rooms each equipped for a special variety of work

The following points as to the lighting of the rooms may be noted The large general room and the smaller room must be well lit—preferably from one side only and that north or east—to avoid cross lights and hot sunshine A light pure grey distemper on the walls will be found useful as a background for colour experiments In the dark room a green wash will prove more acceptable than the black of photographic dark rooms For artificial lighting electricity is preferable to gas but it is desirable to have gas as a second source of lighting adjustable for certain experiments and also available for the smoking of recording drums heating of water and rods for temperature experiments Some form of power will be requisite to drive motors colour wheels recording drums etc The most useful source will be the electric lighting circuit Wall plugs should be arranged at convenient points in all the rooms In addition it will be necessary to have a current of small voltage which can be used for general purposes It may be possible to arrange for the distribution of a current of such voltage to certain wall points but if this is not practicable laboratory batteries must be resorted to The writer has found accumulators satisfactory for general work Strong tables steady but movable are more useful than fixed benches Comfortable stools suited to different heights in persons and in tables are important for ease in work A generous provision of cupboards drawers and cases for apparatus and material is most essential in a small laboratory where the stage must be constantly reset for a fresh variety of work

Short List of Apparatus and Material. *For Lecture room*—Lantern slides illustrating principal features of nervous system and sense organs salient facts from physics of sound and light diagrams and tables wall charts and diagrams

For Laboratory—Models of brain and sense organs microscope and slides illustrative of structure of nervous system and sense organs, motor $\frac{1}{8}-\frac{1}{15}$ h p if for driving single pieces of apparatus $\frac{1}{4}$ h-p if for driving shafting general supply of electric fittings adaptors commutators resistance

boxes keys of different types Morse keys essential, wire of various thicknesses recording drums giving range of speeds from 1 r in 30 min to 1 r in 3 sec (simple drums rotating round a vertical or a horizontal axis driven by a belt from motor or shafting speed varied by size of belt wheel clockwork driven drums constant in rate through a given range of speed) colour wheels driven by hand or motor registering and control apparatus electric writers Marey Tambours some form of time marker $\frac{1}{5}$ sec pendulum Jacquet s chronoscope (clockwork recording 1 sec and $\frac{1}{5}$ sec with connections for electric circuit) some form of chronoscope for recording time intervals (Hipp s model reading thousandth of second) control hammer to standard ize chronoscope $\frac{1}{5}$ sec stop watches, some form of apparatus to exhibit words pictures etc at given intervals (a recording drum revolving round horizontal axis behind a screen serves for many purposes) some form of tachistoscope for momentary exposure a swinging pendulum or falling shutter (for many experiments a projection lantern fitted with a time shutter on the principle of a camera shutter is excellent) a campimeter or perimeter stereoscopes mirror and lens models tuning forks (good range and good maker desirable *e g* c′ e′ g′ c″ a useful set) syren with discs for overtones interference tones etc a monochord some form of windchest with pipes (Stern s variators excellent models) set of resonators suitable for pipes Galton s whistle induction coil olfactometer metronomes some form of ergograph self registering if possible dynamometer æsthesiometer (carpenter s compasses a good substitute) tools well equipped housewife soldering outfit stencil and printing apparatus coloured paper black white and grey paper cardboard illusion cards and stereoscopic slides drugs and materials for olfactory and taste experiments drawing boards and drawing outfit weight cans and shot B E

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SANFORD F C *Experimental Psychology*
TITCHENER, E B *Experimental Psychology*

PSYCHOLOGY (EXPERIMENTAL) —When G T Fechner published in 1860 his *Elements of Psychophysics* he imagined that he was laying the foundations of a general theory of the relation of mind to matter and propounding a new system of philosophy His immediate purpose was to establish definite mathematical relations between physical sense-stimuli and the intensities of sensation following thereon and so to build up a system of mental measurement which should be the psychical counterpart of the science of mathematical physics His ultimate aim was to sketch out a new theory of the Universe centred in the nature of the psychophysical relation In neither of these attempts has his work stood the test of time and the ideals he pursued have been shown to be unrealizable Yet his labours were not in vain, for in the course of his researches he developed a technique of experimentation summed up in the so-called "psychophysical methods" which formed the starting point of a new science, the science of experimental psychology In its earliest development it was the work of one other man, Wilhelm Wundt who published his *Physiological Psychology* in 1874 and opened the first laboratory for experimental psychology, in Leipzig in 1879 There is now hardly a university in Europe or America which does not possess a psychological laboratory, and the position of the science is so well assured that its methods and spirit are exerting a profound influence upon the course of development of kindred sciences such as Education Psychological Medicine Philology, Aesthetics and other *Geisteswissenschaften*

Starting out from the definition of Psychology as the science of the mind with introspection as the fundamental method whereby it acquires its data we have in experimental psychology not so much a new science as rather an improved technique in which introspection is carried out under prearranged conditions In the performance of a psychological experiment the co operation of two persons an experimenter and a subject is generally necessary although in certain special cases their work may be done by one and the same person The experimenter arranges the external conditions of the experiment manipulates apparatus etc, whereby modifications are produced in the subject s consciousness The subject then observes these mental changes in himself by careful introspection and records them with as much detail as possible In this way both objective and subjective conditions of mental change can be accurately controlled, and the experiment can be repeated as often as is necessary not only by the same two workers but also by other workers in other laboratories so that results can be compared with one another and general laws of mental reaction finally deduced

The Psychophysical Methods In the early days of the science experiment was used mainly for the purpose of elucidating the relations between sensations and their corresponding physical stimuli The attribute of sensation to which attention was chiefly devoted was that of intensity and working on the assumption that sensation intensities could be measured in terms of a unit of intensity Fechner and his followers deduced the general law that within any realm of sensation sensation intensity varied as the logarithm of the stimulus It is now universally agreed that sensation intensities are not in themselves measurable magnitudes but that 'contrasts between one intensity and another, or sense distances' as they may be called, are measurable If these sense distances are taken as the measurable magnitudes on the psychical side, the logarithmic law still correctly expresses the relation between them and the stimulus values of the pairs of contrasted sensation intensities Just noticeable differences of intensity which figured so prominently in the earlier work as the "difference threshold" are merely a limiting case of such contrasted intensities

It was in the course of experimental work on sensation intensities that the so called psychophysical methods were developed as we have already mentioned These methods are three in number—

1 *The Method of Minimal Change* or the method of limits in which a standard sensation stimulus is compared with regularly increasing or decreasing values of a variable stimulus in the following ways That value of the variable is chosen which gives an obviously more intense sensation than the standard stimulus gives and is then reduced by successive small amounts until it ceases to elicit from the subject the answer "greater" It is diminished still more and then increased until it again just gives the answer "greater" The mean of these two values gives the upper difference threshold By

choosing values of the variable less than that of the standard and proceeding in an analogous way the lower difference threshold can be similarly determined The order in which the standard and variable are presented is found to influence the result and therefore separate determinations are made for the cases where the former or the latter is presented first In this way a quantitative measure of the influence of the time order on the subject s judgment of difference is determined and is known technically as the time error In similar fashion where the standard may be presented either to the right or to the left of the variable (as in the case of lifted weights) a space error occurs and can be measured

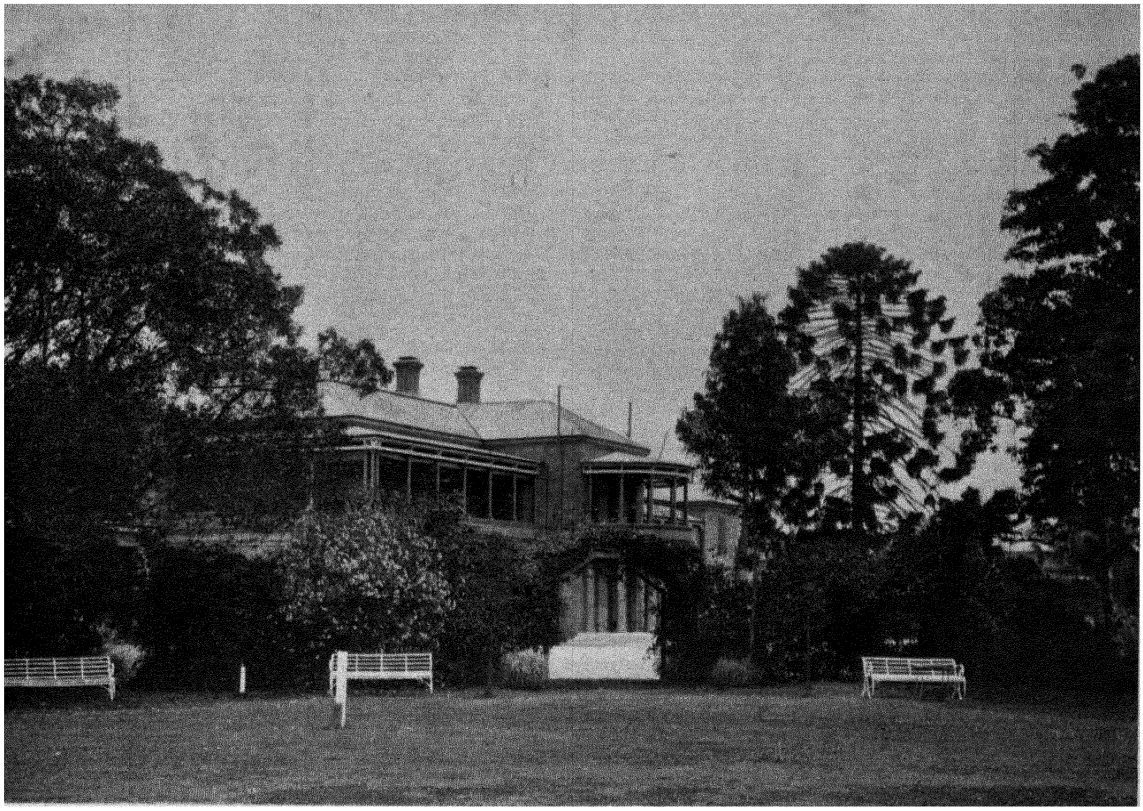
2 *The Method of Average Error* or the method of production Here the subject himself adjusts the size of the variable until it appears to him equal to the standard and makes this adjustment a large number of times under varying conditions (*e g* in one series of measurements with the variable to the right of the standard in another with the variable to the left) By averaging these measurements separately and comparing them a space error can be quantitatively determined There is no time error in this method One important measure that may be obtained by the use of the method is the ' mean variation ' of the different values of the variable which the subject has judged equal to the standard This is obtained by first finding the average of all the values and then finding the average of all the deviations of the individual values from this average counting all the deviations as positive It is a general measure of the reliability of the subject s judgment and although not identical with the difference threshold varies directly with it

3 *The Method of Right and Wrong Cases* or the method of constant stimuli In this method there is a graduated series of variables with each of which in quite irregular order unknown to himself the subject compares the standard a large number of times The standard is sometimes to the right sometimes to the left of the variable sometimes presented first sometimes second and the subject gives as his answers the judgments greater ' equal or uncertain and less ' with reference to the last presented stimulus In this way a series of percentages of each of the three kinds of answers is obtained corresponding to the different variables used The value of the variable corresponding to 50 per cent of answers greater gives the size of the upper difference threshold From the series of answers less the lower threshold can similarly be determined The values are most accurately determined by the method of interpolation (*i e* by fitting smooth frequency curves to the obtained values)

These methods admit of a more extended application than that for which they were originally devised They have for example been employed in the investigation of optical illusions and the different results obtained by varying the length inclination etc , of the lines forming the illusion producing figures and by observing the figures under conditions of momentary as well as prolonged exposure throw much light upon the factors underlying such illusions Even in the realm of sensation intensities a more careful comparison of the subject s introspective record with the various numerical results obtained has in recent years added greatly to our knowledge of the psychological processes involved in the comparison of sense impressions The effects of the experience of ' absolute impression ' side comparison and similar factors have been worked out and furnish a valuable psychological supplementation of an otherwise merely quantitative result Shorter methods of measurement are sometimes used but in principle they are variations or abbreviations of the classic three A thorough training in the use of the latter is an indispensable part of the mental equipment of every experimental psychologist

Head's Experiments In a short review like the present it is impossible to do more than merely refer to a few selected topics and to indicate in an impressionist way the type of problems with which experimental psychology attempts to deal Passing over the enormous amount of detailed work that has been done on the sensation of vision and hearing and the psycho physiological theories that have been propounded to explain the large number of facts known about these forms of experience we may with advantage mention some recent work on cutaneous sensations which is of considerable theoretical importance An experimental investigation was made by Dr Head who cut through one of the cutaneous nerves of his own forearm and then observed the gradual recovery of cutaneous sensibility which occurred in the course of time It was found that immediately after the operation there persisted sensibility to heavy pressure and that the experience of deep seated pain could also be elicited If however the skin supplied by the severed nerve was lifted up in a fold and pressed between the fingers of the experimenter no sensation was experienced In course of time cutaneous sensibility returned in two stages The first comprised sensibility for heat and cold localized in definite spots on the skin and to pain The temperature and pain sensations aroused radiated widely and showed no precise localizability The two points of a pair of compasses simultaneously placed on the skin could not be discriminated as two however widely apart they were separated This condition of the skin was named by the investigators *protopathic* sensibility At a much later stage sensibility gradually returned for light touch warmth and coolness (not localized in definite points of the skin) and the discrimination of two points simultaneously touched on the skin when at a sufficient distance from one another This form of sensibility was named *epicritic* sensibility and on its return the previous radiating and vaguely localizable character of the protopathic sensations disappeared and was replaced by definiteness and restriction It would seem as though the cutaneous sensations of the normal skin which to introspection appear simple and ultimate were the result of a complex physiological mechanism whereby a later form of sensibility is superimposed on a more primitive form and that the simplicity and definiteness is a result of this synthesis There is evidence that the areas of protopathic and epicritic sensibility do not completely correspond the conclusion to be drawn being that they are supplied by different sets of nerve fibres Sensations from the viscera which give rise to "referred pain are probably to be classed with protopathic sensations

Experiments dealing with Visual Experience In the domain of perception experiment has added greatly to our knowledge By employing conditions of momentary as well as prolonged exposure in the case of visual perceptions not only has a deeper insight been obtained into the nature of optical



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illusions but also the processes of reading and of the apprehension of number have become better understood The tachistoscope in its various forms whereby visual stimuli such as dots lines words and other visual objects can be presented to a subject for a brief interval of time (*e g* $\frac{1}{10}$ sec) is an apparatus of great general usefulness in analysing the apperceptive processes that take place in all acts of perception (*i e* the bringing to bear of past experiences either in the form of memories or of unconscious dispositions upon the given impression) By presenting a succession of momentary impressions of words or sentences and observing the mistakes which the subject makes in apprehending them inferences can be drawn as to the processes of apperception aroused such inferences being confirmed or corrected by appeal to the introspection of the subject In visual perception under conditions of prolonged exposure the record of eye movements either by photography or by a system of levers joined up to one writing on a revolving smoked drum gives interesting results It is found that in the apprehension of optical illusions and aesthetic diagrams or objects the eye movements have no relation to the illusory or aesthetic character of the perception and are therefore to be ruled out as possible factors in its production On the other hand in the process of reading the eyes move discontinuously from fixation point to fixation point along a line of print the fixation points being only three or four in number in the case of a line of about a dozen words and the two terminal ones being some distance within the two ends of the line This sequence of eye movements is found to correspond with the processes of attention and apperception involved in the reading

Long series of experiments have been carried out with children and adults to determine the character and accuracy of their observation processes The psychology of testimony has become almost a science in itself and many types of the observing process have been distinguished The importance of all this work for the estimation of scientific and legal evidence is obvious

Experiments dealing with Memory and Association In the domain of memory and association of ideas the possibilities of experiment are well nigh unlimited Single words may be presented to the subject and he may be asked to reply as quickly as possible with the first word that comes into his mind the time elapsing between the stimulus and the reply being measured correct to fifths of a second by means of a stop watch The replies may be classified according to the kind of association that has occurred and full introspective records from the subject give valuable information as to his type of association process The association time as the interval between stimulus and response is called varies from association to association and from individual to individual but if it exceeds three or four seconds as it sometimes does it is regarded as significant of something abnormal in the association In such a case the reaction is usually of an emotional nature a whole system of ideas and memories tinged with a particular emotion being aroused by the stimulus word Where no conscious emotion accompanies a prolonged reaction time it is sometimes assumed that the emotion is unconscious But a state of fatigue or distraction may in some cases adequately explain the anomaly

In experiments on memory the material used has been for the most part nonsense syllables, each consisting of two consonants and an intervening vowel not making sense These syllables have no preformed associations and therefore the process of building up associations between them can be studied from the beginning Lists of such syllables are learnt in definite ways and under definite conditions and then relearnt after the lapse of definite intervals of time or the memory for them is tested in other ways There are many different memory methods but the most reliable is the scoring method In this method a series of nonsense syllables say sixteen are presented to the subject s view one by one at a definite rate of sequence through an aperture in a screen The subject sees only one syllable at a time and he learns the series in trochaic rhythm (*i e* accenting every odd member) This helps to divide the series up into associated pairs of syllables The series is thus presented a definite number of times a number insufficient to produce complete learning The strengths of the individual associations are then tested either immediately after the learning or after definite intervals of time by presenting through the aperture the odd members of the series in quite random order The subject is asked to reply with the first nonsense syllable that occurs to his mind and the time elapsing between stimulus and reply may be measured by a chronoscope connected up electrically with the apparatus The percentage of correct replies and the lengths of the association times are approximate measures of the extent to which the syllables have been memorized

Among the many results obtained by the use of this and other memory methods are the following

1 The rate of forgetting is high immediately after the learning but becomes less and less with further lapse of time

2 The learning of a list of syllables immediately after a previous list has been committed to memory tends to weaken the association of the previously learnt series—a phenomenon known as 'retro active inhibition

3 A given number of repetitions are more effective the greater the number of days over which they are distributed

4 Repetitions of a series from beginning to end are more effective than an equal number of repetitions of sub sections of the series in other words, the whole method is more efficient than the ' part method

5 The strongest associations are formed between successive syllables in a series acting in a forward direction but associations are also formed between non contiguous members of a series and also between contiguous members acting in a backward direction

6 Of associations of equal strength but unequal age the younger associations suffer more at the hands of time than the older

The learning of rational material of course takes place with greater ease than that of senseless material but the laws above mentioned are merely supplemented not superseded by the effects of rational connection

It is found that as many as twenty sentences each expressing some definite thought and read slowly in pairs can be reproduced correctly as regards their thought contents although not necessarily in their original verbal form after a single reading whereas the number of nonsense syllables that can be correctly reproduced after a single

reading is usually not greater than seven or eight This brings us to the question of the nature of thought as distinct from mere association and the comparative experiment just mentioned illustrates the kind of experimental evidence upon which the existence of definite but imageless thought-elements is based In other experiments a series of sentences are read out to the subject and shortly afterwards a number of other sentences expressing analogous thoughts but arranged in a random order and com prising also one or two irrelevant sentences as "catches are read out and the subject is asked to state the thoughts of the earlier sentences which correspond to each of the second series The task is satisfactorily performed by most subjects and introspection shows that there is awareness of the thoughts and of their relations to one another more or less independent of the verbal sensory material in which they are clothed

Association experiments have also been devised which indicate the existence and throw light on the nature of definite volitional elements distinct from the sensory elements ('sensations of strain etc) of consciousness A series of nonsense syllables is read a number of times in trochaic rhythm as in the scoring method, but when the odd members are presented later the subject is asked to reply not with the spontaneously arising second syllables but with syllables which contain the same letters of the presented syllables in the reverse order or in other experiments with syllables rhyming with the pre sented syllables An effort is needed in overcoming the mechanical tendency built up by the initial repetitions and detailed introspective accounts of this effort have been obtained which prove definitely the existence of a non sensory volitional element The technique of all this experimentation on pro cesses of thought and volition is still somewhat crude and immature but a great deal of work is being done along these lines which will undoubtedly produce results of far reaching importance for the science of psychology and possibly too for those of logic and ethics

Pleasure and Pain Experiments Experiments on feeling have till recently been almost entirely limited to a registration of the physiological changes accompanying experiences of pleasure and pain The plethysmograph sphygmograph and pneumo graph have been used to give tracings on a moving smoked surface of the alterations of volume of blood vessels rate of pulse and rhythm of breathing corresponding to variations in feeling tone This general 'method of expression is now being sup plemented more and more by the "method of impression' in which aesthetic preferences are observed under varying conditions of presentation of the stimuli and fuller and fuller introspective accounts are demanded of the subject The word-association test to which we have already referred is very useful in the exploration of emotionally tinged systems of ideas—technically known as 'complexes'—and is finding a wide sphere of application in psychiatry

The Measurement of Fatigue Methods of investigating mental efficiency and mental fatigue can be but barely referred to here The ergograph and aesthesiometer have given reliable results in skilful hands but great care is needed in drawing conclusions from them Direct mental tests of efficiency and fatigue have been coming more into favour during the last few years The addition or multiplication of figures, the erasing of certain letters in a page of print the filling-in of blanks in an otherwise continuous piece of prose all give quantitative results and can be used either as continuous tasks producing mental fatigue and measuring its progress at the same time or as interpolated tests applied at regular intervals in the course of mental work of another kind Work curves can be obtained by either of these methods showing change of mental efficiency with time The various factors affecting the shape of the work-curve such as practice fatigue incitement and adaptation have been investigated in great detail as well as the effect of rest pauses of varying lengths upon the total amount of work done

The Science of Mental Variation Finally, we can but touch the fringe of a field of psychological research in which exceptional activity is being dis played at the present time This is the psychology of individual differences better termed the science of mental variation Individuals differ from one another in every form of mental ability and a pre cise statement of these differences can in many cases only be obtained by quantitative determina tions In the various forms of mental tests some of which we have already mentioned in connection with the problem of mental fatigue we have means of getting a many sided view of these variations The psychophysical methods adapted and simpli fied to meet the exigencies of the case have a new value and furnish the basis of a more general scheme of mental measurement than that sketched out by Fechner And when we go further and consider the question of correlative variations of mental capacity in groups of individuals we find that the modern mathematical theory of probability admits of application in its fullest extent to the elucidation of the problems of the mind The extent to which any two mental abilities show a tendency to vary concomitantly within groups of individuals is measurable by the so called 'correlation coeffi cient if the concomitance is linear or by the "correlation ratio if it is non linear These values form the starting points of mathematical investiga tions which are at present still in the process of formulation but which when developed will throw a flood of new light upon the dynamics of the mind and will bring appreciably nearer that ideal towards which Fechner strove—the ideal of an all inclusive science of mental measurement Yet the qualitative differences of the mind will never be completely bridged and objective measurement must always remain dependent on and subordinate to subjective introspection if the science of experimental psy chology is to retain a character of its own distinct from that of the other biological sciences

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PSYCHOLOGY, FUNCTIONAL —The study of Psychology as that of other sciences must be divided into various sections, but the terminology is still vague

Titchener takes the view that, as Biology is divided into morphology (the study of structure) and physiology (the study of function), so Psychology may be divided into structural and functional branches He says "There is a functional

psychology over and above the psychology of structure We may regard mind as a complex of processes shaped and moulded under the conditions of the physical organism We may regard it, on the other hand as the collective name for a system of functions of the psycho physical organism The two points of view are not seldom confused The phrase association of ideas for example may denote either the structural complex the associated sensation group, or the functional process of recognition and recall the association of formation to formation He points out that much of the work of modern psychologists comes under the term functional

Experimental psychology has dealt more or less up to the present with problems of structure, while descriptive psychology is concerned with problems of functions

Structure should be studied before function or the student may fall into the error of accepting a teleological explanation which is fatal to scientific advance Experimental psychology naturally tends towards the study of the structure of the mind as it follows more closely the lines of the exact sciences but it has also done valuable work in the study of function and there is evidence to show that such work on the functional side will come more and more to the front Titchener considers that memory recognition attention etc are functions of the mind and as such can be compared to digestion and can be studied more or less experimentally It is this measurement of function which will be of such value from the educational point of view We can analyse the span of attention memory quickness and accuracy of apprehension judgment and imagination and we must look upon these processes as being evolved by organic selection as serviceable to the organism

The study of the development of these functions and their analysis cannot fail to be of value to the teacher and experimental psychology has made great strides along these lines during the past decade At the same time it is impossible to draw a hard and fast line between the two branches of the subject To quote again from Titchener

By functional analysis I am led to believe that the root function of mind is given with the simplest will process by structural analysis that the morphological elements are given with the sensations and the affection ' M J R

PSYCHOLOGY IN EDUCATION—The Latin Grammar reminds us that verbs of teaching govern two accusatives one of the person another of the thing Teachers tend to lay more stress on the subject taught than on the person but modern educational theory emphasizes the claims of the person The paidocentric tendency—as Dr Stanley Hall names this directing of interest to the nature of the pupil and to the pupil's point of view—has always existed though its full development belongs to quite recent times Plato took some account of the various qualities of the pupil that make for successful educational results, and the English educator Roger Ascham in his *Scholemaster,* utilizes the Platonic analysis Quintilian, too in his work on the training of the orator lays some stress on the personal qualities essential in those who are to become successful public speakers Thomas Fuller in his *Holy and Profane State* includes among the qualities of the good schoolmaster that " he studies the scholars' natures as carefully as they their books " Rousseau's educational masterpiece the *Émile* is strongly paidocentric and, when we reach Pestalozzi, we find the demand for the study of the pupil s nature expressed in the saying that it is necessary to psychologize education It is true that Pestalozzi himself knew but little psychology, yet his point of view was received with favour and since his time there has been an increasing tendency to regard a study of psychology as an essential part of the training of a teacher Till quite recently, however, there has been little real application of psychology to the work of the classroom In text books for students in training to be teachers there used to be a section at the beginning set apart for psychological theory while the rest of the volume dealt with practical matters Psychology and teaching were both represented but the universal complaint was that they were always kept separate they were like oil and water, they would not mix Of late the combination has been to some extent effected Writers on the subject no longer label their works *Psychology Applied to Education* Professor Welton gave a lead by entitling his work *The Psychology of Education* (1911)

Practical Use of Psychology to a Teacher Curiously enough it is the professional psychologist himself that feels called upon to give a warning about the teacher's use of psychology Professor James and Professor Munsterberg have both counselled teachers not to expect too much from this subject James told them that all the psychology that was really of value to them could be written on the palm of the hand while Munsterberg assured them that there never was a teacher who would have taught differently had the seat of intelligence been the liver instead of the brain The teacher was in fact warned off the psychological domain and recommended to stick to his own business

But Pestalozzi was right though what he meant by psychology was something quite different from what would satisfy Munsterberg There is a popular and a technical psychology It is sometimes said that we are all psychologists more or less The element of truth in this is that we have all to deal with human nature in some form or other, and have accordingly to dabble in what is the subject-matter of psychology But it does not follow that we are psychologists in the technical sense The point of view is the determining feature The auctioneer studies human nature in order to learn how to stimulate bids he is not interested in mental processes but in practical results The psychologist, on the other hand studies mental processes as such, and has no interest in the material results of those processes A train of thought has the same value for him whether it results in the liberation of the slaves or the burning of Rome Herein lies the teacher s danger It is wise to warn teachers against studying the pupil as a mere specimen The living child here and now present is what must occupy the focus of their attention Teaching is a vital process in which there is a vigorous give-and take between personalities Psychology is the cold-blooded scientific study of mental and spiritual reactions

This scientific attitude is the one thing about which psychologists are agreed In the definition of their study they are unanimous as far as "Psychology is the science of " But then differences arise Many writers, who are fond of peace,

are willing to finish the phrase with the word "mind," on the understanding that this term includes all the spiritual or at any rate non-material nature of man Some would prefer to use the word "soul' taken in practically the same sense Others again, would like to make psychology the science of *consciousness* since this is the element that forms the real subject matter of psychological investigation Some present-day writers impressed by the importance of subconscious or even unconscious spiritual process, wish to get rid of the word *consciousness* altogether in the definition and propose to call psychology the science of *behaviour* To the teacher there is something very attractive in this definition It offers possibilities of help that were absent from the old psychology

For the teacher the old psychology had one great defect, it confined itself to the study of the mature human being It studied man on the spiritual side very much as the old natural histories did on the physical Its methods were markedly static The human nature studied was regarded as the subject on the table is regarded by the anatomist For the teacher, the result was disastrous He studied the psychology of the mature mind and straightway applied his results to the developing minds of his pupils A most dangerous fallacy is wrapped up in the saying that a boy is a little man He is potential man, if you like he is man in the making but he is no more a little man than a tadpole is a little frog or a grub a little butterfly Psychologists recognized this when they labelled one aspect of their study *genetic* psychology the psychology of growth or development The child has come to his own as a subject of study but he may be treated from two totally different standpoints His nature may be investigated so as to discover his qualities in order to help us in manipulating them or in order that by acquiring a knowledge of his present state we may learn more about the nature of man as a whole Treated from the second point of view he supplies matter for the prosecution of purely psychological research With this the teacher has no special concern But when treated from the first standpoint the child forms the material of what is popularly known as Child Study a subject that is obviously of great practical importance to the teacher But professional psychologists are at hand with grim warnings about the futilities that too often accompany the direct study of children It cannot be denied that a great deal of time has been spent in investigations that have only a sentimental value and that statistics have been used to produce results that have no real significance for education But, on the other hand the intelligent study of children cannot but help the teacher So far from warning him off child study the professional psychologists ought to give him some guidance in the methods he should adopt in prosecuting that study

Attitude of Approach Obviously the teacher must avoid the static methods of the old psychology must give up the natural history plan Within the period of childhood itself there is plenty of development, so Child Study must be treated genetically This becomes clear when we examine a book like Professor Claparède's *Psychologie de l Enfant* in which we find the different periods of childhood carefully marked off from one another The very title of Claparède's book implies the real point of the professional psychologist's criticism of Child Study If we call it Child *Psychology* we recognize that it is carried on in a scientific way, and it will not do to criticize teachers for foolish methods of Child Study and at the same time warn them off from the field of psychology What is wanted is that teachers should conduct their work and their studies in such a way as to get the best practical results without losing touch with the human side of their pupils

In another direction the newer developments of psychology have increased the value of the subject to teachers Formerly the science confined itself to the study of the human individual Recently it has extended its range and takes account of the interaction of individuals upon one another This new branch known sometimes as Social Psychology sometimes as Collective Psychology, has obviously great attractions for the teacher Even in the training of an individual pupil as in the case of Rousseau's *Émile*, the teacher depends largely on the interactions set up between the pupil and those around him But the ordinary professional teacher has a very special claim on collective psychology for most of his work is carried on by means of classes —and a class is a collective psychological unit a more or less homogeneous crowd The psychology of the class is only now beginning to be studied but the professional teacher is entitled to hope for much practical help when the subject is developed

The Place of Experimental Psychology In another direction the opening up of psychology promises great things to the teacher Experiment has always been to some extent associated with the study but in the past more has been done in the way of observation largely introspective In what is now called Experimental Psychology we have practically a new field in which all the resources of brass instruments and statistics are utilized Some of the results obtained with the ergograph the aesthesiometer and the tachistoscope are regarded with suspicion and there are those who feel inclined to question the basis on which statistics are manipulated by the formulae of Correlation But there can be no doubt that the newer methods have the great advantage of dealing categorically with definite points of practical importance Binet's intelligence tests for example are of the utmost consequence to practical teachers They are at present in a very incomplete state and are subject to a perfect hail of criticism But as this is accompanied by series of testing experiments all over the world we are being put into exactly the most favourable position for finding the truth Already very useful results have been obtained in connection with the memory with fatigue with association in its various forms and there is every reason to hope for still better results The great charm of the experimental method is that teachers can put practical questions to the professional psychologist and wait for a reply without themselves dabbling in matters and methods beyond their range

The Correlation of Psychology and Education. The suggestion is frequently made that between the practical teacher and the professional psychologist there should arise an intermediary who is a competent psychologist and has had sufficient experience as a practical teacher His business would be to keep abreast of all the modern developments of psychology and to extract from the results whatever facts bear a practical relation to the work of the school To some extent this functionary already exists in the persons of those members of the staffs of training colleges who are called masters

and mistresses of method No doubt in the past these functionaries were more qualified on the scholastic side than on the psychological but the newer representatives of the class have all had a technical training on the psychological side At any rate they are thoroughly capable of mediating between psychology and education Their work at present however is with the young teachers who are undergoing training The great mass of the profession is at present uncared for except in so far as some of the teachers study psychology and try to apply it in their work The question naturally arises why should not practical teachers study psychology directly at least to the extent of being able to follow and understand all the newer developments? No doubt a great deal of the work of modern psychology has no direct bearing upon educational work and can be quite wisely ignored by the practical teacher But in order to be able to discriminate between what is useful and what is not the teacher should have some first hand knowledge of psychology He will not ask impossibilities of the brass instruments if he knows the principles on which they are worked

The correlation between education and psychology is in fact being made by the development of what is called *Experimental Pedagogy* Meumann in Germany has done pioneer work in this subject and a good deal is being done both in England and America on the same lines If one turns to a book like Dr Rusk's *Experimental Education* or to *The Journal of Experimental Pedagogy* one will see how closely the psychological and the purely educational are linked together Formerly we have seen the difficulty was to bring the two into contact The modern difficulty is to separate the sphere of the one from that of the other—not that there would be any advantage in separating them if it were possible

The one danger is that the teacher may acquire the heartless scientific attitude and regard his pupils as mere raw material for psychological study but, after all the nature of things secures most of us against such a lapse No man can teach and psychologize at the same time Once he gets before his class he has to deal with individual human beings who insist upon being treated as such It is sometimes said that what happens with young teachers in training is that their minds are stuffed with psychology while they are admonished that when they find themselves face to face with a class they must forget all about it The quip is not without point But it may be accepted by the trainer without any qualms It is true that the teacher must not carry his psychology with him consciously into the classroom But he cannot rid himself of his psychological lore by merely giving himself up to the needs of the moment He comes before his class with a paid up capital of reactions acquired under the direction of the psychological knowledge he has acquired He is not thinking of psychology when he is teaching but he is teaching in a particular way and not otherwise, because of the psychology he has already mastered

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PSYCHOLOGY, RECENT DEVELOPMENTS OF GENERAL —The doctrine of evolution changed the point of view from which all living beings were regarded The concept of immutability of type gave place to that of constant development towards a type more perfectly adapted to the life it has to lead The movement influenced psychology later than the biological sciences but its influence has transformed the conception of psychical life as fully as that of bodily life

Sixty years ago psychologists generally regarded their task as essentially finished They had carried out with much thoroughness the analysis of the structure of their own minds and they accounted for that structure by a thorough going application of the doctrine of the association of ideas The leading characteristics of this psychology were its individualistic outlook its assumption that intelligence is the leading factor in psychical life, and its articulation of that life by mechanical relations Equally marked were the individualistic, intellectualist and mechanical aspects of the psychology of Herbart, which reduced psychical life to the interaction of idea forces which were the representatives in consciousness of external things The natural effects of such theories on education were a belief in its omnipotence an exaggeration of the part played in it by instruction, an identification of learning with accumulation of facts

At the same time the older doctrine of faculties, though theoretically inconsistent with that of associationism or Herbartianism, furnished the accepted criterion of the educational value of subjects of instruction While most professed psychologists were disciples of some form of psychical mechanism teachers commonly, both in their theory and in their practice held together incompatible shreds of both that theory and the theory of faculties

These theories however agreed in this that the mechanism and the faculties were each deduced not only from adult life but from the life of philosophical thinkers Neither theory saw any need for a separate study of the psychical life of the young Each assumed that, the more perfect the life analysed, the more complete and accurate must be the results attained

The coming of evolution has introduced fundamental changes of conception which have led to a great enrichment of the study a vast enlargement of its scope and is bringing about a franker acceptance of the testimony of consciousness to its own nature This movement is of necessity correlated with the general philosophical reaction against the arid materialism of the later eighteenth and most of the nineteenth centuries The need for knowledge of origins led to the initiation of the study of children, of primitive races and of the lower animals The conceptions appropriate to the understanding of each class were sought in those lives and not assumed to be those which the traditional psychology set up as typical and normal

New Methods The new demand has necessarily led to new methods Children are being studied intensively as individuals and extensively by observation in the mass and each method promises valuable results In this enlargement of method also psychology followed the lead of biology The evidence for biological evolution was gathered from observations of considerable extent and that for psychological evolution must be sought outside the consciousness of the individual psychologist So introspection was found inadequate and observation of the manifestations of the psychical lives of others was seen to be necessary For a time there was a tendency to make this substitution too thorough going After all introspection is the only direct source of knowledge of the psychical life and so must give the one available clue to the mysteries of another life Objective methods then are supplementary to introspection and are indispensable to any knowledge that deserves to be called scientific for nothing is more unscientific than to generalize one's own observed adult life as descriptive of that of all other human beings or even as the norm to which all other lives approximate in proportion to their perfection But they rest on a basis of introspection and therefore call for more exact introspection than was demanded when it had to serve as interpreter only to itself

Further in all methods of external observation more or less complete precautions can be taken to secure certain definite conditions this is experiment and experiment in many forms marks the new movement in psychology For a time there was a tendency to assume that experiments really physiological would yield psychological knowledge A psychology without a soul has ever been the dream of the materialist The results were disappointing and such methods have been largely replaced by others of a more definitely psychological character Many problems of educational importance are being thus attacked such as the testing of general intelligence the transference of power to a department of activity other than that in which it was acquired the conditions of attention the natural forms of various processes of acquirement the inducement of fatigue

Study of individuals in the mass could not remain individualistic and the evolutionary hypothesis of natural selection emphasized the importance for life of the relations of the individual with his environment In genetic psychology the same point came out yet more clearly Children were seen to take up into their own mental lives the characteristic features of the psychical life of the family the lives of savages were found to be governed by tribal ideas So the need for studying psychical life in the community as well as in the individual became apparent Thus has arisen social psychology, a study still in its infancy but which has already revolutionized traditional views of the nature both of the individual and of the community A theory of the origin of the latter from an aggregation of the former is no longer tenable, an individual separated from a community is seen to be a mere abstraction of thought as devoid of reality as a community in which were no individuals Every community has its psychical life and that life is focused in one way or another in the life of each of its members But neither community nor individual is possible apart from the other

Changes in Fundamental Conception The changes of view and method imply further a changed conception of the fundamental nature of psychical life Evolution sees life as a striving through difficulties towards a goal even though that goal may not be consciously apprehended by the individuals in whom the life is manifested The passive mind of the presentationist psychologist is incompatible with such a conception And with it goes the over emphasis on the intellect as the ruler of life Conation and feeling come by their own and are recognized as fundamental and not mere by products of the play of ideas Thus the newer psychology is much more cognitive than was the older psychology with real life as we know it for in that certainly few find intellect the constant ruler It involves of course a reversion to the earlier conception of life as essentially functional which found expression in all forms of the doctrine of faculties but it is a return with a difference for now the dynamic force known as life is derived from the lives of its ancestors and has therefore an innate particular nature which and only which can find expression in actual life External influences can therefore no longer be regarded as all powerful in training a child and one of the most important problems both of psychology and of education is to determine the part which such influences can play in modifying inherited nature But that nature itself as self directed activity is the fundamental fact for education

J WELTON

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PSYCHOLOGY, STRUCTURAL.—The concomitant development of psychology and biology has led the former to draw many of its conceptions from the latter among others the notion of structural psychology A biological organism may be studied from the structural (morphological) or the functional (physiological) point of view Similarly if mind be regarded as an organism it can be studied from the structural or the functional point of view Structural psychology will then have for its province the analysis and description of mental contents whereas functional psychology will describe the operations of consciousness As morphology assumes that a complex organism is analysable into a number of structural elements,

so structural psychology assumes that consciousness at any moment is analysable into a number of structural elements The analogy however is not complete There are in the mind no psychical entities analogous to cells Structure in psychology cannot refer to spatial relations it can mean merely that consciousness is a complex in which are distinguishable attributes each incapable of further analysis In this sense only can mental elements be comparable to the simple structures of anatomy

This conception has only recently been explicitly introduced into psychology and has not yet been rigorously applied Structural and functional terms are frequently used without any systematic attempt to keep the two points of view clearly in mind Some psychological terms (*e g* sensation and image) are purely structural others (*e g* attention and thinking) functional but most of them are used in either sense even sensation is sometimes used in a functional way This is partly because structural and functional psychology unlike anatomy and physiology have not developed into independent studies and partly because in psychology as in biology structure and function are closely correlated and can be completely understood only in relation to each other

There is no consensus of opinion as to the number of structural elements Sensation is generally admitted to be one of them but there is little agreement as to the number of sense attributes Images are sometimes classed with sensations and then called centrally excited sensations sometimes they are put in a class by themselves Feelings have been variously described as elementary irreducible states of consciousness as attributes of sensations as complexes which are the product of a particular form of integration of sensory attributes and even as a kind of sensation Thought has been resolved by some into sensations feelings and images while by others it has been resolved into these and a thought element distinguishable from and irreducible to sensations feelings and images These differences of opinion demonstrate the necessity for a complete overhauling of the psychology of the elementary contents of consciousness and a systematic attempt to show how all the complexity of consciousness is built up from them S D

PSYCHOLOGY, THE RELATIONS OF ANALYTIC AND GENETIC TO GENERAL —The characteristic of all science is that it deals with relations that hold true universally Yet psychology can start only from the individual mental life for that only is open to immediate observation Here then is the problem of general psychology—to set forth what is normal in the psychical life of man to distinguish what belongs universally to that life from merely personal peculiarities This implies that the first step in psychology—as in every other sphere of investigation—is analytic the attempt to distinguish and hold apart in thought features which in actual experience are found only in complexes By comparison of experience with experience whether in the life of one observer or in the lives of several what is common to them can be marked and named and so given a kind of quasi independence for thought

Life being immediately known as activity the first analyses were functional So arose Plato s distinctions of three fundamental springs of conduct and Aristotle s more elaborate classification of the aspects of life under five faculties, a modification of which was the traditional map of psychical life during many centuries The object sought however was not so much to gain a detailed knowledge of the ever-changing phenomena of psychical life as to determine the nature of that life With the development of natural science came a change in the conception of knowledge The importance attached to facts enormously increased, and the theory of the universality of law gathered strength When these conceptions were applied to the psychical life the content of consciousness became the centre of interest and speculation saw as its task the discovery of universal relations constituting the machinery by which that varied and varying content is bound into a whole The ideal both of result and of method was naturally sought in the physical sciences So the aim was to find the limits of analysis in elements which could not be decomposed and in relations which could not be simplified The results found were sensations and the law of association of ideas Much of the analysis was of permanent value But it had inherent defects It was limited to the intellectual contents of consciousness emotion and volition could not be thus examined for contemplation of these modifies them They were consequently accounted for as secondary products of the play of the intellectual elements Nor was this merely an omission of part of the field which analysis sets out to survey It was based on and strengthened the theory that psychical phenomena are of the same nature as physical phenomena and are explicable by the same logical presuppositions It resulted that the matter yielded by the analysis as the raw material to be synthetized in life was only a portion or rather an aspect of the reality It resulted too that the attempted synthesis by formal processes was wholly artificial and that the mechanical product was very different from the real life known by each one in the very act of living Mechanism can never give a satisfactory explanation or even an adequate description of life simply because life is the very thing it omits while it laboriously arranges life's products

Genetic Psychology The influence of evolution gradually brought this home to psychologists The field for analysis was seen to be indefinitely enlarged beyond the individual consciousness which alone is open to introspective analysis Further life in all its manifestations was recognized as an operative force gradually working its way towards more perfect adaptation to its function in the world No study of it could thereafter be regarded as adequate which dealt simply with a cross-section of it cut through the stream of development at a moment determined by the convenience of the observer The problem was no longer a mechanical one of explaining an existing piece of machinery, but an evolutionary one of tracing the development of a form of life So arose genetic psychology which sets itself this task Its material is vast for the new conception shows the individual mind inseparable from the common psychical life of the community and inexplicable apart from it Thus, it is not simply the gradual growth to maturity of the individual human being that has to be traced, but also the development of the common mind, and that involves careful observation of mankind at various stages of civilization in the present, and the study of the products of man's psychical life in the past Everything that man has left which bears the

impress of his mind—his art his laws his literature his religion his records of his deeds—all is material full of testimony to his mental growth if only the records can be interpreted Consequently, genetic psychology cannot be isolated from social psychology, for the psychical life it has to follow is at once social and individual

Nor is it independent of analytic psychology But that each may be profitable to that general psychology of which we are in search the results of analytic psychology must be recognized as mere abstractions whose separation from each other exists only for thought The error of the traditional psychology was to confuse logical complexity with psychical development So sensation perception conception judgment inference were supposed to appear in life just in that order and until any one of them appeared in clear consciousness it was denied existence Under this conception genetic psychology would aim at noting the first distinct appearance of each "higher" mode of thinking But such a genetic psychology would be as abstract as the analysis from which it starts In actual psychical life every mode of mental activity is always present and is implicit or explicit according to the direction of attention The task of genetic psychology is not to trace how a fragment of psychical life receives fragmentary additions till a complete life is formed but to see how a life complete from the first becomes progressively aware of modes of dealing with its world which it implicitly uses in practice from the beginning J WELTON

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PSYCHOMETRY AND PSYCHOPHYSICS—The term *psychophysics* is usually applied to day to a rather narrow domain of experimental psychology namely, that concerned with the appreciation of sense differences such as the differences between lifted weights or various shades of colours, and allied matters But had the ambitious aims of its founder Fechner been realized this science would have had a much wider indeed an all embracing territory to explore for it was then hoped that measurement of the relationships between the psychical and physical would lead to a strictly quantitative psychology and to a new and clearer philosophy These hopes however, have not been realized and many think them unrealizable

The term *psychometry* is less commonly used and may perhaps be taken at its face value as covering all forms of mental measurement free from the narrower implications which have come to be associated with *psychophysics*

The purpose of the present article is therefore to consider from a central point of view all forms of mental measurement and to discuss their aims methods and success in relation to the central idea of a *quantitative* psychology

Mental Measurement The possibility of the true measurement of mental entities has been debated hotly for half a century and would probably be negatived by a majority of psychologists at the present time There is however, a fairly general agreement that mental states of the same class can be 'ranked' in order of their intensities, and that the differences between mental states (such as two feelings of *warmth*, or two experiences of *anger*) are themselves mental states and can also be ranked as when I might say "I was angry on Monday a little less angry on Tuesday and much more angry on Wednesday

The point of difference between magnitudes which can thus be ranked in order and quantities which can be measured is commonly said to be that in the latter case a *unit* is employed but not in the former In the writer's opinion this contrast is one of degree only and not essential If differences and the differences of these and so on, can all be ranked the result is measurement if the magnitudes available are infinite in number and almost as good if they are merely numerous though not innumerable Indeed it may be doubted whether all measurement is not really mental measurement Psychophysics in its attempt to establish mental units may have failed without the impossibility of mental measurement in a wider and perhaps truer sense being thereby demonstrated

Fechner's Mental Units It was G T Fechner who some sixty years ago began the most thorough going attempt to establish a system of mental units He wished to measure a mental state as one measures a length of calico by taking a yard stick laying it along the calico making a mark and transferring the yard stick to its new position and so on In this form of measurement the idea of a movable unit is most pronounced and probably Fechner's failure was largely due to his not having taken for comparison some physical measurement where the unit is less directly applied as in measurement say of weight The units which he adopted in the mental domain were just noticeable differences For example, suppose I want to measure the difference in the feeling of weight produced by masses A and B when supported in a certain way on my hand On Fechner's system this would be done (1) by adding masses to A till I could *just* detect the addition (under certain experimental conditions) This would be called in mental units *one* (2) The new weight $A + a$ would then be compared with slightly heavier weights and one found which could just be detected as heavier This is *two* in mental units This process would be repeated until the weight B was reached, when a number would have been found expressing the distance mentally from A to B

The chief assumption in this is that those just noticeable differences are mentally equal This has been strongly denied and strongly asserted But since larger differences which contain equal numbers of these units are commonly found to be approximately equal in introspection, there is some justification for the assumption Whether theoretically justifiable or not however there can be no doubt that Fechner's system is at present at least practically unworkable

Fechner's Logarithmic Law. Weber had previously found that in order to be just noticeable, the increment to any stimulus had to bear a constant ratio to that stimulus If a 103 gram weight is just noticeably heavier than a 100 gram

weight, then the weight just noticeably heavier than a 200 gram weight will be 206 grams This ratio of 3 per cent (approximately) only holds for lifted weights A different ratio holds for visual comparisons, yet another for acoustical and so on Moreover, the law is only approximately true Based on this experimental series of facts, the *fundamental formula for mental measurement* formulated by Fechner was—

$$d\,(\text{sensation}) = c\,\frac{d\,(\text{stimulus})}{\text{stimulus}}$$

Integrating, this becomes

$$\text{sensation} = c\,\log_e\,\text{stimulus} + C$$

Putting the stimulus in this equation equal to the threshold T for which the sensation is just below the threshold of consciousness, *i e* = zero, we have

$$O = c\,\log_e\,T + C$$

and subtracting

$$\text{sensation} = c\,\log_e\,\frac{\text{stimulus}}{T}$$

Putting T = 1 and transferring to the ordinary logarithm system we get—

$$\text{sensation} = k\,\log\,\text{stimulus}$$

The Psychophysical Methods In the mass of detailed experimenting which followed Fechner s bold pioneer researches there were worked out certain methods of experiment which have a wider applicability than the field in which they were designed These methods are described at some length in another article from the experimental point of view (See EXPERIMENTAL PSYCHOLOGY) A few lines may be devoted here however, to the mathematical aspect of the data accumulated It is found necessary except in the crudest experiments to view the data in the light of the mathematical theory of probability This is because in experiments upon human beings it is impossible to keep the conditions of experiment constant as can approximately be done in a physical or chemical experiment A repetition of what is apparently the same experiment gives a different result just as in dicing (a form of game of chance which originally led to the development of the theory of probability) the throw of ten dice will give results varying from 10 to 60 These dice throws however will *average* 35, and their curve of *scatter* can be calculated Similarly an average result can be found from psychological experiments and from the scatter of the data something can be learned of the factors at work In more complicated forms this idea leads to fitting elaborate curves to psychophysical data and to devices intended to gauge the homogeneity of the data accumulated and to disentangle from one another such matters as practice effect fatigue diurnal variations in efficiency and the like The statistical chapter in Myers text book (see References at end) is probably the best introduction for a beginner to this part of the subject, and Brown s *Essentials of Mental Measurement* gives further work and many references

The psychophysical methods are found in use in many places beyond the narrower domain of psychophysics Indeed in one sense all human experimenting is based on them For example the successful Binet-Simon tests use a group form of the method of minimal changes These same tests give, too, an excellent example of the forms which mental measurement can take when the strict use of a truly mental unit is no longer insisted on

Mental Ages and Intelligence Quotients. In the Stanford Revision of the Binet Tests, there are six tests for each year Beginning with a year of which the subject can pass all the tests, the experimenter proceeds step by step to a year for which none of the tests can be passed For example, suppose a boy passes all the tests for year VI, three for year VII, one for year VIII and none thereafter His " mental age " is then calculated as six years *plus* two months for each higher test passed that is six years eight months If his real age is five years three months, then his intelligence quotient is—

$$\text{I Q} = \frac{80 \text{ months}}{63 \text{ months}} = 1\,27$$

Now it is to be noted that there is here no attempt to use a mental unit The average increase in intelligence of children per annum is in a certain sense, used as a unit But there is no guarantee whatever that the increase in intelligence which children on the average make in passing from their sixth to their seventh birthday is equal to the increase say from their tenth to their eleventh birthdays We have a set of milestones but no guarantee that they are equal distances apart Nor, for the practical purposes to which the scale is put, does this matter one iota

A priori there would seem to be no reason for expecting the " mental years " to be equal Indeed it is conceivable that at certain ages children might slip back a little in their intelligence But it is interesting and important to notice that, as far as experiments have gone there is some reason to believe that an individual s I Q remains fairly constant as he grows older The above boy, if tested four years later, might be expected to have a mental age still 27 per cent ahead of his real age Though this *proves* nothing about the mental steps which are being treated as units, it certainly seems to *suggest* that they really are equal, and that the Binet measurement is more strictly *measurement* than might at first be imagined

Somewhat similar remarks apply to other systems of mental tests, such as the Yerkes Point-Scale

The Correlation of Abilities. In another article (see CORRELATION) formulae are given which enable the degree of concomitant variation shown in two different performances to be calculated Suppose, for example, that the two performances in question are a form examination in Latin and one in arithmetic It must be strongly emphasized that calculation of the " correlation " between the marks obtained in these examinations can have no meaning if the number of boys in the form is small At least thirty should take part if chance correlations are to be reasonably avoided, and even thirty is far too small Secondly, the Bravais-Pearson formula or formulae strictly based upon it are the only absolutely reliable ones But for many purposes an approximate formula such as Spearman's " Footrule, ' is sufficient and for an illustration of the method we may take perhaps a form of only ten boys (instead of the much larger number really required) Let the order of merit in the two examinations be as shown on the next page

	Latin	Arithmetic
Jones	1	3
Smith	2½	4
Robinson	2½	1
Anderson	4	7
Grey	5	2
Charlton	6	5
Emerson	7	9
Tennyson	8	6
Forster	9	10
Robson	10	8

Then the degree of correlation or resemblance between these lists is by Spearman s Footrule formula dependent on the gains in rank from either to the other

Robinson (1½) Grey (3) Charlton (1) Tennyson (2) Robson (2) have gained in rank in arithmetic as compared with Latin and the sum of their gains will be found to be 9½ This sum of the gains is divided by $n^2 - 1$ where in this case $n = 10$ (boys in the examination) and subtracted from unity

$$1 - \frac{6 \text{ S (gains)}}{n^2-1} = 1 - \frac{6 \times 9\frac{1}{2}}{99} = 0\ 42$$

The fraction 0 42 is not yet a measure of the correlation It has to undergo a correction which is practically equivalent to increasing it by 50 per cent We thus get the correlation—

$$r = 0\ 63$$

for the resemblance between the lists $r = 1$ would have meant that the order of merit was identical It must again be emphasized that this calculation is illustrative only that larger numbers are needed and that Spearman s formula though useful is only approximate

The method gives a convenient check on examiners reliability If two teachers will *independently* mark the same essays and find the correlation between their marks they will be shocked to find how low it sometimes is

The Theory of General and Specific Ability The chief result of the application of the methods of correlation to mental tests and school subjects has been the above theory which has been advanced by Professor Spearman and supported by mathematical and other arguments In the writer s opinion these arguments are invalid and the theory unproven, but many well qualified to judge think otherwise

This theory is that in performing any test we make use of two factors one our General Ability(g) which can be applied indiscriminately in any direction whatever and is uneducable the other a Specific Ability which is only usable in that particular task or in *very closely* allied tasks and has no connection with tasks dissimilar in what would commonly be thought to be only a slight degree

This theory is mainly based on the fact that when the correlation coefficients between a number of different performances are calculated they are found to fall into a certain order or progression, which Professor Spearman has termed *hierarchical order* A formula for measuring the perfection with which they do this has been devised and the perfection found to be very complete This complete perfection of hierarchical order can be shown to be explicable by the theory in question

The writer and others who oppose this view do not admit the validity of this argument The mathematical accuracy of the measure of hierarchical order is questioned and denied and it is claimed that such hierarchical order as is actually found is the natural thing to expect on any theory whatever

Following Professor Spearman s methods and accepting without question his formulae Dr Webb and Mr Maxwell Garnett have asserted the presence of two other general factors which they term Persistence of Motives (w) and Cleverness (c) respectively These of course stand or fall with the validity of the original argument

It is difficult to reconcile these new general factors with Spearman s original assertion that all correlations between dissimilar performances are due only to one general common factor And it would seem that there is grave danger of the exponents of this theory returning to a crude form of faculty theory in which g w, and c play the parts of personified faculties of intellect will and feeling That the human mind has these aspects everyone will admit but that entities which can be expressed by algebraical symbols stand behind them is less certain though many appear to consider it possible

The suggested alternative view is that of a closely integrated system of numerous units and as analogies the integration of the units of the physical body by means of the nervous system and the products of glands and the idea of unit characters so fruitful as Mendelism are appealed to

G H T

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PSYCHOPHYSICAL METHOD, THE — (See PSYCHOLOGY [EXPERIMENTAL])

PSYCHOPHYSICAL PARALLELISM —The difficult question of attempting to decide what is the true relation between body and mind has given rise to the development of certain theories Physiology has proved that the psychical processes are connected with the cortical or cerebral processes and through these with other parts of the body The will to move the arm apparently produces changes in the cortex which stimulate the efferent nerve and movement follows A stimulus acting on the skin produces changes in the sensory nerves which in turn excite the cortex and the result is the sensation of touch It is clear that the sensation differs fundamentally in kind from the sense stimulus and from the cortical change, the one is psychical and the other is physical How is the connection produced ? There are three possible alternatives (1) Interaction between the two processes (2) one sided action in which the body acts on the mind or the mind on the body (3) simple concomitance in which the mental and physical processes are independent but perfectly correlated

The first hypothesis is explained by the *Interaction theory* This assumes that mind acts on body and body reacts on mind The will to move the arm definitely produces changes in the cortex which in turn affect the efferent nerves and finally result

in movement On the other hand, a light stimulus causes changes in the retina and in the afferent nerves which in turn excite the cortex and the cerebral changes interact on the mind and produce sensation

The second view (*i e* that of one-sided action) gives rise on the one hand, to the doctrine of *Materialism* which holds that mind is a function of the brain and is produced by the higher cortical centres and on the other to the doctrine of *Idealism* which assumes that matter is but an aspect of mind

The third hypothesis is known as the theory of *Psychophysical Parallelism* This assumes that when a certain psychical process occurs a cortical process occurs simultaneously with it Thus the retina is stimulated by red rays of light the nervous impulse generated in turn excites the cortex and simultaneously with this the sensation of red occurs Again the will to move the arm is accompanied by a change in the cortex which produces excitement in the efferent nerves to the arm and the movement results Thus psychophysical parallelism assumes that the cortical and psychical processes occur simultaneously and are perfectly correlated but it does not attempt to explain how this correlation occurs This hypothesis therefore differs from the others in that it is a simple statement of facts and does not attempt any explanation of the relationship which exists between the body and the mind From the point of view of psychology it is a good working hypothesis

In its most philosophical form this theory is based on the double aspect hypothesis which assumes that mind and matter are but two aspects of the same reality M J R

PSYCHOSIS —The term psychosis when used in connection with normal mental processes has one of two meanings Either it signifies the total state of consciousness at the moment or it is used to indicate the psychical element of a psychophysical process as neurosis describes the nervous element

In connection with pathological psychology another meaning of the term is rapidly gaining ground Here 'psychosis is the equivalent of an abnormal mental state and the main forms of insanity are described as 'psychosis The term is also applied in this sense to the isolated groups of ideas or mental complexes which are present in all forms of insanity and which give rise to many of the less severe types of nervous disorders M J R

PSYCHOTHERAPY —This means treatment by mental measures The conditions to which it is applicable are numerous and exceedingly common Most of them come under the heading of *neuroses* or " functional ' nervous troubles of which hysteria (including most morbid fears) is a characteristic example There are certainly more people suffering from some form of neurosis than not for only the smaller number of neurotic cases culminate in actual nervous invalidism or " breakdown ' The distinguishing mark of a neurotic tendency is disproportionate reaction to a given situation or event undue emotional importance being attached to it This surplus is not a simple exaggeration as is usually thought, but represents a displacement of feeling from an older, associated mental situation on to the current one the reaction to which is thus determined by more factors than are evident The therapeutic problem essentially is how to render such reactions (in feeling or conduct or both) more proportionate to the situation that has elicited them The emotional disturbances that underlie neurotic conditions can also lead to bodily affections of various kinds, such as digestive and bowel irregularities eye strain or temporary loss of vision, palpitation and pain at the heart, " functional " paralyses of the limbs and so on, these are equally amenable to psychotherapy

The *insanities* even those having no discoverable physical cause are on the whole strikingly refractory to psychotherapeutic treatment It is however, possible to influence for good the earlier stages of some such conditions

Chronic *alcoholism* of whatever form and addiction to *drug habits* are also much more refractory to psychotherapy than the neuroses It is nevertheless possible to effect a cure if mental deterioration has not proceeded too far *Sexual perversions* are more amenable the most stubborn being inversion (homosexuality)

A further irregular group of cases comes under the care of the psychotherapist which may be termed *character anomalies* This class includes such states as depression and lack of zest in life amounting to active unhappiness, conjugal estrangements and incapacities various mental conflicts and difficulties inability to get on smoothly with relatives or colleagues to face adequately the tasks of life, and so on In conjunction with this class a word may be said about the important field that *childhood* offers for psychotherapy This subject may be fairly distinctly divided into three In the first place the early recognition of neurotic tendencies gives the opportunity for treating them at what is by far the most favourable and plastic period of life and the results yielded by treatment then are both more satisfactory in quality and more easily achieved Secondly some of the methods used in psychotherapy lend themselves also to use in dealing with the more difficult of children in connection with such traits as stubbornness defiance, sulkiness bad habits cruelty and the like Thirdly and most important the actual knowledge gained in the practice of psychotherapy concerning the genesis of later neuroses and character abnormalities dictates certain principles in the training of children which are commonly neglected relatively simple to act on and of the greatest consequence for their later development

Psychotherapeutic Procedure There are many sub varieties of psychotherapeutic procedures but they all fall into the three following groups—

The simplest the oldest and the most generally practised is that of *Suggestion* including hypnotism Through the action of suggestion a hyper receptive state of mind is brought about which has the double result of causing a general relaxation of nervous tension and further of rendering the patient susceptible to beneficial statements assurances and instructions given by the physician It is now known that the action of suggestion depends on the patient's emotional absorption in the idea of a person whom he respects so that the relationship is a peculiarly personal one and therefore one fraught with many potential disadvantages

The second and more elaborate procedure may be termed *Re education* In this the therapeutic aim is to appeal to the patient's reason, in the hope that fuller information concerning the symptoms will lead to the disappearance of them The attempt is thus made to explain away ' the symptoms,

and at the same time to inculcate healthier trains of thought broader or fresher points of view and better balanced feelings The results of this method of treatment are probably better than those of suggestion Its weakness is that too often the so-called explanations consist of rather banal platitudes and so do not carry matters much further The reason for this is that in the purely re-educative procedure there is no satisfactory method for discovering the real causes and meaning of the neurotic disorders so that there is nothing to do but deal superficially with what is often the end product of a complicated chain of mental processes In these circumstances much of the good effected by the treatment is really due to a more subtle form of suggestion or personal influence

The third and most ambitious procedure is that of *Psycho analysis* (*q v*) a method devised by Freud of which a changed version has been put forward under the same name by Jung and supported in this country by Eder and Constance Long It differs from "re education" in recognizing that the causes of a neurosis are far from evident and only to be discovered and dealt with by a patient and unravelling analysis The practice of psychoanalysis is intimately bound up with a certain theory of the neuroses gradually elaborated as the result of analytic experience according to which such disorders are the product of various internal mental conflicts The conflicts are between opposing tendencies one set of which is incompatible with the ethical or aesthetic standards of the conscious mind and so are 'repressed' or kept from consciousness the individual refusing to be aware of them The symptoms are then the substitutes for these repressed tendencies and are symbolical presentations of the conflicting forces The repressed tendencies are of various kinds but the kernel of them is always sexual The aim of the treatment is to destroy the function of the neurotic symptoms rendering it superfluous by means of resolving the conflicts this is done by breaking down the inhibiting repressions that form a barrier between the two sets of forces and thus allowing the latter to melt together In this way a unity is established between the two regions of the mind—the conscious one and the repressed "unconscious" one The devices used to penetrate through to the deeper layers of the mind are principally free association of ideas and dream analysis (*q v*) The technique is such that all the morbid material in the mind has to be dealt with it being impossible to isolate any symptom the trouble involved in this however is more than compensated for by the completeness and permanence of the results ERNEST JONES

PTOLEMY (properly Claudius Ptolemaeus) — Of his personal history nothing is known except that he flourished at Alexandria in A D 139 is famous for his great treatise on Astronomy called by the Arabs *Al magest* He also wrote a second treatise on astronomy and astrology one on the fixed stars and a great work *Geographia* on geography His views on astronomy and geography were followed by scientific men from his own day down to the sixteenth and seventeenth centuries In his Ptolemaic system of astronomy the fundamental doctrine is that the earth is the centre of the universe and that the other heavenly bodies move round it in circles at a uniform rate As a geographer he calculated his longitude from Ferro in the Canaries and his latitude from the parallel of Rhodes (See also ASTRONOMY, HISTORY OF THE TEACHING OF)

PUBLIC HEALTH ACTS —Public health legislation began effectively in 1848 For a year or two precedent the various "Clauses Acts"—dealing with gas, water town-improvement and so forth—were at the disposal of localities for adoption or incorporation into their bye laws Earlier still the several localities were granted special powers by Parliament on request The 1848 *Act* created a general board of health and was the basis of all subsequent enactments though repealed by the great *Act of* 1875

This 1875 Act is very comprehensive In some respects — chiefly administrative — it has been amended and later Acts have dealt with later problems broadly it is still in force It does not apply to London which has its own *Act of* 1891 amended—in details only—in later years It constitutes throughout England two sorts of sanitary district (1) Urban and (2) Rural The Local Government Board—itself constituted in 1871—is the central authority and by the Local Government Act of 1894 these districts are under (1) Urban District Councils and Borough Councils and (2) Rural District Councils

By laws must not be contrary to the law of the land and must receive the approval of the Local Government Board The Councils have powers of rating and of borrowing money

Acts in reference to various aspects of public health are legion All are of importance to children in some—as for instance the *Notification of Infectious Diseases Acts* (1899 and onwards)—they are intimately concerned But as specifically brought about by the wider meaning given to education in these latter years mention must be made of the *Education* (*Administrative Provisions*) *Act* 1907 Clause 13 has introduced medical inspection of elementary school children It was soon recognized that the discovery of ailment should be followed by treatment this is now almost universal under the *Local Education Authorities* (*Medical Treatment*) *Act* 1909

But great changes have taken place since the war The Local Government Board is now at an end and has been displaced—or engulfed—by a new Department by the Ministry of Health Act 1919 and as from the appointed day 1st July 1919 all the powers and duties of the Local Government Board have passed to the Ministry of Health Under Section 3 (1) of the same Act and as from the appointed day 1st December 1919 there have been also transferred to the same Ministry "all the powers and duties of the Board of Education with respect to the medical inspection and treatment of children and young persons under paragraph (*b*) of Sub-section (1) of Section 13 of the Education (Administrative Provisions) Act 1907 as amended and extended by the Education Act 1918" with the reservation that the Minister may make arrangements with the Board of Education respecting the submission and approval of schemes of local education authorities in this regard The effective control both of the work which is done and of the way in which it is done is now in the hands of the Ministry of Health and the chief medical adviser to the Board has become the chief medical adviser to the Ministry

In the last few years there have been important developments by way of departmental regulations

e g venereal diseases regulations arising out of report of Commissioners in that reference—and regulations on *notifiable diseases*, there has been considerable extension here and manifold forms of tuberculosis and febrile and inflammatory disorders recognized as infectious or contagious are now included A E L.

PUBLIC HEALTH SERVICE, TRAINING FOR THE —The Public Health Service offers good openings for men and women—more especially women A good training is indispensable no matter which branch of the service it is desired to enter whether as sanitary inspector health visitor or superintendent of an infant welfare centre or school for mothers

Before deciding to train for one of these professions students should satisfy themselves that they have a decided liking for and interest in this type of work that they are not afraid of hard and often unpleasant duties and that they possess unlimited tact patience and sympathy

Without these qualities their work will prove a failure It is often full of difficulties and at times is very discouraging

Training of a Sanitary Inspector The paper qualification of a sanitary inspector and inspector of nuisances is one of the following—

1 Certificate of the Royal Sanitary Institute for Inspector of Nuisances This certificate qualifies for the office of an inspector of nuisances in any urban and rural district outside London It is also recognized by the Local Government Boards of Dublin and Edinburgh and many local boards and corporations

2 Certificate of the Sanitary Inspector s Examination Board This certificate qualifies for London appointments and is also accepted outside London

3 Certificate of the Sanitary Association of Scotland

4 Certificate of the Sanitary Inspector's Association

5 Diploma of the Royal Institute of Public Health Ireland

The mere holding of a certificate is not sufficient for obtaining an appointment further qualifications being required In the case of men, they may be (*a*) a good practical knowledge of plumbing and sanitary work (*b*) from three to six months practical experience with a qualified inspector or (*c*) experience as clerk in the office of a sanitary department under the medical officer of health

The following additional certificates are valuable (*a*) Certificate for inspectors of meat and other foods (*b*) certificate in sanitary science or plumbing (*c*) smoke inspector s certificate

A good general education is essential and it is to be regretted that all the examining bodies do not insist on a definite educational standard before admitting candidates to their examinations

The subjects of examination include hygiene (more especially municipal hygiene) sanitary science building construction, sanitary law and administration and elementary chemistry and physics A good systematic course should be attended including both lectures and practical work It is common to find lectures given on building construction and sanitation but without any actual plan-drawing Before deciding on a training centre students should find out how much practical work is included in the course

Salaries offered vary considerably throughout the country, being lower, as a rule in the provinces, and higher in London and other large towns The commencing salary—speaking quite generally—is £150 for assistant appointments, and full inspectors may receive £200–£350 per annum, a chief inspector may rise to £500 in an important borough

Training of Health Visitors and Superintendents of Infant Welfare Centres. The training of a health visitor and that of a superintendent of an infant welfare centre can be considered together, as the work undertaken by these two officials is in some respects similar

In September 1919 the Board of Education laid down definite regulations as to the training of health visitors in a statutory order entitled 'Board of Education (Health Visitors Training) Regulations 1919 These regulations have to some extent standardized the requirements and qualifications of a health visitor and the regulations are welcomed by a number of persons who for years have been attempting to raise the standard of the training of a health visitor The regulations must necessarily be of a more or less experimental nature and they are so drawn up as to leave a certain latitude to the training centres

It cannot be too strongly emphasized that only well educated women should train in this profession which requires a great deal more than paper qualifications The openings are good and likely to increase for the value of the work of a well trained health visitor is at last being recognized and appreciated The work is chiefly concerned with the vast problem of infant and child mortality, and with the care of the mother

It is fully recognized that the three years training for a fully qualified hospital nurse or the training for the certificate of the Central Midwives Board is of value to the health visitor but these courses are designed for other purposes, and of necessity involve the devotion of much time to matters a knowledge of which is not essential for health visitors while they do not cover many of the functions which a health visitor is expected to perform It is open to a health visitor to take separately the course for the C M B certificate There should always be a demand for persons who possess this qualification as for persons who are fully trained nurses Such qualifications cannot however be regarded as necessary for all health visitors since in most areas arrangements can conveniently be made for these special duties to be otherwise provided for

The regulations provide for (*a*) full courses (*b*) shortened courses

(*a*) *Full Courses* (two years' duration) —No student is eligible for admission unless she is over 18 years of age at the commencement of the course

(*b*) *Shortened Courses* (one year's duration) — The shortened course is intended for students who already possess substantial knowledge or experience likely to be of assistance to them in their profession No student may as a rule, be admitted to a shortened course, unless—

(1) She is a hospital nurse who has completed a three years' course of training at a recognized training school for nurses, or

(2) She has spent not less than three years in full time employment as a health visitor, or

(3) She has obtained a university degree or its equivalent

Students must satisfy the authorities of the institution that they possess knowledge or experience likely to enable them to undertake with profit a shortened course

It is not advisable for women over 35 years of age to train as health visitors

The subjects included in the course are elementary physiology hygiene (including domestic and personal hygiene and general hygiene) sanitation elementary building construction infectious and communicable diseases elements of sanitary law, maternity infant and child welfare elementary economics and social problems methods of artisan cookery and household management

Practical Training Practical work should occupy about half of the students time, and should include attendance at maternity infant and child welfare centres school treatment centres at maternity or children's hospitals or children's observation wards or other similar institutions They should also obtain practical experience at a tuberculosis dispensary In addition not less than two months should be given to practical work in elementary economics and social problems

On the completion of the course of training students are required to enter for an approved examination which is partly written and partly oral In determining the award of a diploma regard is had to the records of the student's training The examination is conducted by an Examining Board approved by the Board of Education one or more of the board's officers acting as assessors

It is very advisable for a student training as a health visitor to qualify at the same time as for a sanitary inspector and the two courses can run concurrently if the student is taking the two years course of training Such a combined course of training is offered by the Battersea Polytechnic London S W 11 The following are amongst the institutions offering approved courses of training for health visitors recognized by the Board of Education Battersea Polytechnic London S W 11 Bedford College for Women Regent's Park London King's College Women's Department Camden Hill London Cardiff University and Liverpool University

Other institutions are applying for recognition

The commencing salary varies considerably throughout the country and depends on qualifications and on the nature of the work to be undertaken There is a decided improvement in the salaries paid to health visitors and several local authorities are paying their health visitors commencing salaries of £300 per annum though there are still some authorities which are still offering a commencing salary of only £150 H P

PUBLIC SCHOOL REFORM IN THE NINETEENTH CENTURY —The condition of our public schools had challenged the attention of the country during the earlier half of the last century the Reports of Lord Brougham's Commission of Inquiry concerning Charities (1818–1837) showed the general decadence of the smaller endowed or grammar schools both in quality of education and number of pupils There was often but one master and in many instances the only teaching was given by the near vicar or curate What should have been reasonably successful schools had but four or five pupils—or possibly on occasion, none For instance Chesterfield from 1832–1836 had one boy Birmingham, in 1734 and Moulton, in 1744 had none Many had become elementary—and bad at that—in the range of their curriculum and in the accomplishment of their pupils This universal degradation seemed in part owing to the admission to the large public schools of boys who perhaps might have been expected to attend the neighbouring grammar school, while these larger schools themselves needed educational improvement Frequently in effect their separate houses were private schools, so with the Town boys at Westminster the Dames' houses at Eton, and the Commoners houses at Winchester The serious work of all the schools was classical with excursions into connected history geography and political science French and English—if taught at all—did not rank high in purpose or in result

The Public Schools Commission In these circumstances the growth of the same educational anxiety which ultimately led to the Elementary Education Act of 1870 naturally brought about the Public Schools Commission with Lord Clarendon as president which reported early in 1864 Nine schools only—the great public schools of the country—were considered Charterhouse Eton Harrow Rugby Shrewsbury Westminster Winchester Merchant Taylors and St Paul's The Report dealt with seven and recommended a number of administrative reforms with happy results The London Schools—St Paul's and Merchant Taylors—were left undisturbed The Public Schools Bill was introduced in February 1868 and passed as an Act in July of the same year

Schools Inquiry Commission But it was seen already that more was wanted and the Schools Inquiry Commission was appointed Lord Taunton was president and members were Dr Temple—afterwards successively Bishop of London and Archbishop of Canterbury Dean Hook Mr W E Forster and Sir Stafford Northcote—later Lord Iddesleigh Some of the assistant Commissioners were exceedingly able and enthusiastic educationists Matthew Arnold Mr Fitch later Sir Joshua and Mr Bryce afterwards President of the Secondary Schools Commission and successively Sir James and Lord Bryce Their Report appeared in 1868 and was altogether excellent the best possible introduction to the problem of secondary education Reform of the schools was set going and made progressively effective by removal of religious disabilities the establishment of representative governing bodies and improvement of the curriculum —particularly in relation to modern requirements A E L

PUBLIC SCHOOLS, AIMS AND DEVELOPMENT OF —Neither in the terms of reference nor in the Report of the Royal Commission to inquire into the Public Schools (1864) itself is any definition of a public school given but nine schools were named as the subject of the inquiry Eton Winchester Westminster Charterhouse St Paul's Merchant Taylors Harrow Rugby and Shrewsbury The Commissioners acknowledge that the selection is somewhat arbitrary determined partly by antiquity and partly by prestige

The *Oxford English Dictionary* describes a public school as originally a grammar school founded or endowed for the use or benefit of the public either generally or of a particular locality and carried on under some kind of public management or control In the last century it was confined to such schools as have developed into large boarding schools An

essential feature is that order is maintained and discipline administered mainly by the elder pupils themselves Now generally used to include more than twenty other large schools, ancient and modern (besides the nine named in the Report)

It would indeed be an invidious task to name these twenty schools and most of the hundred and odd schools that send representatives to the Head Masters Conference would claim to be included The conditions for admission to the Conference are as stated in their organ the *Public Schools Year Book* (1) That the school numbers at least 100 (2) that it sends five or six pupils yearly to the universities (3) that it is controlled by a governing body created by some statute, scheme or other trust deed For our present purpose there is no need to define the name more closely than is done in the Oxford Dictionary Schools on the border line have been mostly modelled on the great public schools and a great *Realschule* in which the classics are a subordinate subject or an extra has not hitherto attained in English society the rank of a public school

The Commissioners state The classical languages and literature should continue to hold as they now do the principal place in school education They thus describe a not uncommon type of the product of English public school education—

A youth after four or five years spent at school quits it at 19 unable to construe an easy bit of Latin or Greek without the help of a dictionary or to write Latin grammatically almost ignorant of geography and of the history of his own country unacquainted with any modern language but his own and hardly competent to write English correctly to do a simple sum or to stumble through an easy proposition of Euclid a total stranger to the laws which govern the physical world and to its structure with an eye and hand unpractised in drawing and without knowing a note of music with an uncultivated mind and no taste for reading or observation

We should expect a proposal for some radical reform in the system but we find instead an eloquent encomium of "the grand old fortifying classical curriculum with certain palliatives to temper its severity and a plea for the admission of modern subjects provided always that they are taught as subsidiary or supplementary to the classics In their model scheme of work two hours a week are assigned respectively to (1) French *or* German (2) science (3) music and drawing English subjects are ignored and the establishment of Modern Sides is left an open question

In the fifty years that have since elapsed so many revolutionary changes in education have taken place that all that can be here attempted is to summarize some of the principal reforms that have been effected and to indicate the direction of possible further reforms

Classics The amount of time devoted to Latin and Greek composition has sensibly diminished It seems almost incredible that a far fetched costly sickly exotic ' as Macaulay called it dies hard It is still set in entrance examinations and counts high for entrance scholarships Of the fifty-three conference schools who now take the Common Entrance Examination (*q v*) eleven set no Greek paper in twenty-nine, Greek is optional, four omit the Greek composition At Harrow it is obligatory only for the Classical Side, and at Eton, *bond-fide* candidates for the Army Class are excused Greek

No head master among the nine great schools has yet discountenanced the study of Greek before the age of 14 With rare exceptions, Greek is no longer exacted for entrance, and in several schools the language has been deferred till the Upper Middle Forms

Public schools have remained conservative in their treatment of grammar *Lily s Grammar* was authorized in 1542, in the modified form of the *Eton Latin Grammar* it survived till 1868 In 1866 the *Public School Latin Primer* was imposed on all the schools belonging to the Head Masters Conference in spite of the protest of men like Mr E E Bowen Though it is still nominally the standard grammar it is slowly falling into desuetude The methods of modern language teachers have greatly influenced their classical brethren, and grammar is being recognized as subsidiary to reading The reformed pronunciation of Latin and a uniform grammatical nomenclature for ancient and modern languages are further marks of progress The experiment of teaching Latin as a living language has also been tried with some success and *realien* in the form of models casts coins, pictures and photographs are being more and more employed by classical teachers

Greek we may safely prophesy will be begun later and be confined to pupils who have shown in Latin a special aptitude for linguistics nor do we believe that the general study of Greek will thereby suffer But Greek is only a side issue and the pitched battle between the humanities and science has still to be fought Latin and Greek are recommended as an unrivalled gymnastic

Henry Sidgwick in 1867 pointed out that Latin and Greek are not a pair of Siamese twins and that such virtue as resides in learning one of the two languages will not be lost if they are severed nor doubled if they are combined The revolt against the doctrine of transferred faculty is of later date but it is implicit in Henry Sidgwick s protest,

Modern Languages At Marlborough which may be taken as a type of a modernizing school French was taught as a rule by the Form master however slight his knowledge of the language might be and in the Sixth Form Dr Bradley combined French and history making Guizot his text book Now all pupils are taught at the least to pronounce correctly and to understand when addressed in French The Reformed Method is commonly adopted and most of the teachers have qualified themselves by a residence abroad The foreign *professeur* has not yet been superseded but he would no longer describe himself, like the Eton *professeur* examined, as *un objet de luxe*

English The first public school in which English was taken as a serious subject was the City of London by Dr Mortimer followed by Dr E A Abbott Elsewhere occasional essays in English were required portions of Scott Macaulay, and other standard authors were set for holiday tasks, and prizes were awarded but Shakespeare Milton, and Tennyson were made known to schoolboys mainly by translating them into Latin verse or Greek iambics All this is changed and generally English now forms a part of the regular work throughout the school though the hours assigned to it in the lower forms are still inadequate Professor Hales deserves mention as a pioneer in helping forward this change

Teachers in Public Schools. No change has been more conspicuous in the last half century than the steady laicization of the profession Even the great public schools have not been able to resist the tendency of the times Before then Mark Pattison, in a monograph on F A Wolf had written "The first condition of a good teacher is that he should be a teacher and nothing else, that he should be trained as a teacher and not brought up to some other profession" It was in 1881 that one of them who himself had been ordained on his promotion to a great headmastership, delivered this remarkable testimony "If I were to name the twelve best living schoolmasters that I know, two only are in Holy Orders"

The aggregate percentage of clerical masters in the ten schools it is said in 1870, was 54 in 1880 it was 40, in 1890 it was 28 and according to the *Public Schools Year Book for* 1915 was then 12 According to the last list of members of the Head Masters Conference there were 51 clerics and 62 laymen In boarding schools one or more clerical masters are a necessity by reason of the chapel services The appointment of Mr Frank Fletcher in 1903, to the headmastership of Marlborough—a school founded for the sons of the clergy with a predominantly clerical body of governors—is a sign of the times, and since then Haileybury (another clerical foundation) Charterhouse, Clifton Wellington College and Winchester have followed suit Lay head masters now address boys from the pulpit

The inequality of salaries between the head and his staff is one of those anomalies only explicable by tracing it back historically Statistics are not available and the present salary of a great head master is one of the *arcana imperii*, but the salaries in 1884 were communicated by the three tenants to the Commissioners and are recorded in their Report We may quote the following figures Eton, £4,500 net, Harrow £6 280 Winchester £3 000, Shrewsbury, £2 000 Rugby £2 900 and the profits of boarding-house In the amended scale proposed by the Commissioners these figures were somewhat reduced but the stipend allotted to the second in command never exceeded the half of that assigned to the head master In a French *lycée* or a German gymnasium the senior professor never receives less than two-thirds of the director s salary The salaries of assistant masters in public schools differ very widely but Harrow may be taken as a sample of a wealthy public school A Harrow master starts at £300 a year rises after two years of probation to £400 and after three years more to £500 If he is fortunate enough to succeed to a House his income will be doubled or trebled and at 60 he is entitled to a pension (to which he has contributed) of £600 This may be taken as a maximum and the descent is rapid as is clear from the fact that in 1914 the average salary of assistant masters in English secondary schools was £175 10s

In the functions of our great head masters there has been of late a marked change They still in the majority of cases combine the offices of a French *proviseur censeur* and *aumônier* and add to these the duties of a chaplain and the care of a boarding house but in the time of Thring Temple and Bradley they took besides with the assistance of a composition master the bulk of the teaching of the Classical Sixth Form Keate taught a division of 200, and Moberly a composite class of sixty or seventy Now a head master relegates most of the teaching to a Sixth-form master, and confines himself to one divinity and, at most, four or five classical lessons a week He is becoming more and more what a French *proviseur* or the head master of a large elementary school is a general supervisor, superintendent, framing time-tables determining the curriculum organizing his staff, and composing differences that may arise among them, enforcing discipline and administering condign punishments, and if he is "a shepherd of the people," like the late F W Walker of St Paul's studying the aptitudes of each boy as he rises in the school, helping "lame dogs over stiles, and pointing the way to a university scholarship

Under the revised statutes framed by the Charity Commissioners and afterwards by the Board of Education in accordance with the Public Schools Act of 1868 the head master is given the power not only of appointing his assistants but of dismissing them at pleasure and without appeal It speaks well for the tolerance and kindliness of our head masters that they have so rarely exercised their autocracy

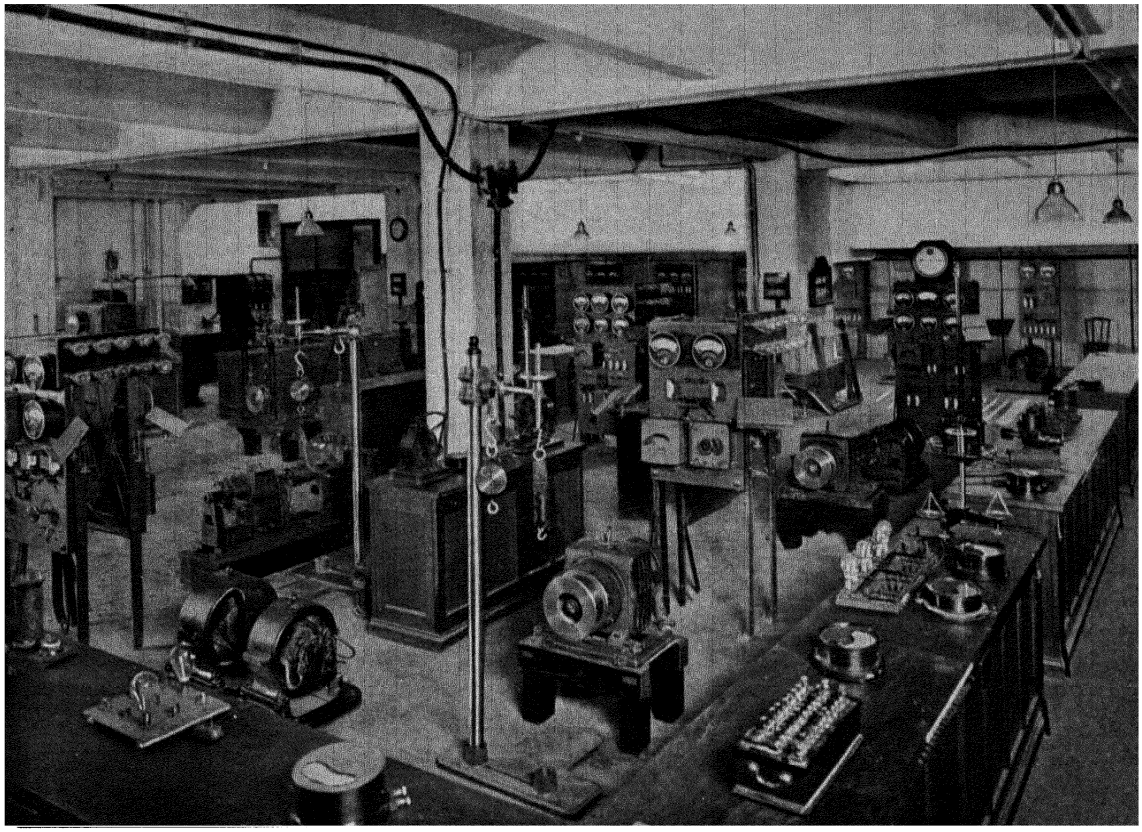
The Association of Assistant Masters have long agitated for the right of appeal and there is good hope that before long it may be secured by means of the Registration Council, which represents both heads and assistants

The battle for training has been vigorously waged and in theory the day has been won In the newer universities professorships of education have been established and in some, degrees in education are conferred but we must wait till the permanent regulations of the Teachers' Registration Council (*q v*) come into full force to see training insisted on in the higher ranks of the profession In practice our head masters still adhere to what has been called the doctrine of "apostolic succession"

In the inner life of public schools there have been so much development and progress but there is no such revolutionary change to record as the frank recognition of science and modern subjects Public schools are still the appanage of the upper classes of society and public only in the sense "Open to all that can afford to pay On the Continent as Matthew Arnold testified the middle class is brought up on the first plane and in England on the second plane and in the best French *lycée* a pupil is boarded and taught for a fifth of what he would be charged at Eton or Harrow

Athletics Since the Commission of 1864 the cult of athletics has steadily grown School matches are reported not only in sporting papers, but in the daily Press the Eton and Harrow match is next to Ascot the most fashionable of London gatherings and at the schools themselves the event of the year No one would wish to see games superseded or gymnastics and military drill put in their stead They are the feature in our public schools that has most excited the admiration and envy of all foreign critics but the most acute of them have seen no less the reverse of the medal

Religion and Morals With the religion and morals of public schools we must deal very briefly There can be no question that owing partly to what Thring called "the philosophy of the brick wall" partly to the humanizing influences of art, music, and English literature and even more to the closer relation of boys and masters—*camaraderie* it might almost be called—the moral tone of schools



Regent Street Polytechnic—The Electrical, Telegraph and Telephone Laboratory



Photo by C. A. Dorn

Rugby School

PLATE LXXVI

has greatly improved The brutal bullying of Westminster that inspired Cooper's *Tirocinium* and nearly killed J A Froude the horrors of Long Chamber, and the monitorial "tundings" of Winchester are things of the past School missions first set on foot by Thring of Uppingham have spread to other schools, and boys have learnt (as at Winchester or in holiday camps as under Mr Paton at Manchester) to take an active and personal interest in their poorer brethren

In public schools 'the religious difficulty' has never been felt In the past this may be ascribed to the easy going indifference of well to-do parents but more recently to the broad liberality of head masters such as Percival H M Butler and E A Abbott In spite of a conscience clause Nonconformists are still virtually excluded though at Harrow and Clifton Jews houses were established

The typical public school of to day is a federation of houses which may differ one from the other in discipline culture and moral tone almost as widely as the Balkan States The wise parent in deciding where he shall send his son is exercised at least as much about the choice of a house as of the school

Day schools like St Paul's are now in a minority and schools like Clifton College which has contrived to combine nearly all the advantages of home and collegiate life are rare but we may safely predict that schools of this type will be multiplied Public schools will never lose their prestige but they are feeling, or will feel more acutely the pressure of hard times The number of parents who can afford a boarding school for their sons is rapidly diminishing and the number who would for choice keep their children at home is increasing The public school of the future will be forced to set its house in order to reduce extravagance and to provide an education no less liberal than before but one that has incorporated in its curriculum the new learning and adapted itself to modern needs

To convince the democracy that they are what they profess to be—public schools—they must submit themselves to State inspection

In fine they must provide an education that fits a man to perform justly skilfully and magnanimously all the offices both public and private of peace and war F S

PUBLIC SCHOOLS, COMMON ENTRANCE EXAMINATION TO THE —(See PREPARATORY SCHOOLS)

PUBLIC SERVICES, EDUCATION FOR THE HIGHER.—The scope of this essay is intended to apply especially to the home service of the Foreign Office the Diplomatic and the Consular careers, to the administrative appointments under the Colonial Office and to those under the Government of India and in addition to the staff of the Board of Trade (which is or should be made the Ministry of Commerce) and to the Ministry of Agriculture in short to the responsible and commissioned officers of all departments of State which have to do with world affairs with affairs affecting the welfare of the inhabitants of Great Britain and Ireland and all other parts of the British Empire so far as that welfare is dependent on our relations with foreign countries, or on the right administration of all the countries ruled or guarded by the King-Emperor

Theoretically all such appointments under the Crown are held to be determined by personal merit and fitness as attested by the successful passing of examinations Practically, there are the usual inconsistencies and illogical conditions All appointments under the Foreign Office worth consideration are the direct personal acts of the Secretary of State for Foreign Affairs, who, however, relies more or less on the suggestions put forward by the Private Secretary or the heads of departments No one can be accepted as a candidate for examination as Foreign Office clerk, diplomat or consul (and appointment after a successful passing of the examination) who does not first receive a nomination from the Secretary of State In regard to the Home staff of the Foreign Office and the Diplomatic Service such nominations are theoretically given only to candidates of British birth (that is to say, born in the Islands of Great Britain and Ireland) and possessing a private income of not less than £400 a year The real intention of this provision is that the Secretary of State for Foreign Affairs requires to be satisfied that he gives his nomination only to a young man of known family and antecedents of vouched for respectability and trustworthiness In regard to the Consular Service such strict conditions of United Kingdom birth and guaranteed income do not enter into the factors governing the appointment

Under the Colonial Office the system is anomalous In that branch of the overseas Service which carries on the Imperial administration in Ceylon Hong-Kong and Malaysia appointments ("Eastern Cadetships") are given to successful candidates in examinations without prior nomination Over the whole rest of the British Empire, which is governed from London (Crown Colonies and Protectorates) appointments are only by nomination from the Secretary of State for the Colonies And success in a test examination is not a condition of appointment In fact here pure patronage is exercised and candidates are not chosen by competition though they may be called upon to pass through prescribed educational courses

Under the Indian Government all candidates of the covenanted service are chosen from the successful candidates in public examinations Such is also supposed to be the method of recruitment for the Colonial Office Home Staff and for the staffs of the Board of Trade and the Ministry of Agriculture So that we find the principle of nomination—as against open competition under examination—confined to the Foreign Office staff Diplomatic and Consular Services and the greater part of our Crown Colonies and Protectorates administration At the same time the whole of the conditions of appointment to service under the Crown in all these careers is so obscurely and confusedly stated, that it is difficult to formulate a perfectly accurate statement on the subject

Qualifying and Competitive Examinations. There remains however for our principal consideration the type of examination the kind of mental endowment to which nearly all candidates are sooner or later submitted Is the educational equipment required of them appropriate to the functions they are called upon to perform? With regard to India the Colonial and Diplomatic Services, the Board of Trade and Ministry of Agriculture, we can only answer "No" In the Consular Service, like the Colonial Service there are important distinctions There is a special Consular Service for the Levant China Japan and Siam, and the

(inappropriate) examination in this career is virtually the same as that which is imposed on the Diplomatic and Home Foreign Office appointments But the curriculum of the examination applied to the rest of the Consular career implies a reasonable educational test The subjects consist for the most part of (1) English Composition (2) the making of *précis* of correspondence on a subject likely to come within the scope of consular affairs (3) law as it affects commerce shipping, marriage testamentary dispositions and copyrights etc (4) arithmetic (5) commercial and political geography (6) political economy (7) French, (8) German or Spanish Neither with the choice of subjects for such a career nor with the style of examination paper set for them can any fault be found This curriculum might equally well serve as an obligatory basis for all other foreign and Colonial appointments under the Crown besides entry into the Diplomatic Consular Services (which should be fused) and the staff of the Foreign Office But in the cases of the better circumstanced careers there might be a few additional subjects of alternative adoption by candidates carrying with them extra marks which might start those who were successful in them on a better paid basis Such additional subjects for a Diplomat Consul or Foreign Office clerk might be the Russian Italian modern Arabic Turkish Persian Portuguese modern Greek or Yugo Slav languages the modern History of the British Empire of Europe and America Economic Botany and Zoology with special attention given to the geographical distribution of plants and animals and the relations borne by both to commerce agriculture hygiene and the diseases of man beast and plant also Anthropology and Ethnology of a generalized scope

For service within the widely varied range of our magnificent Indian Empire the additional and alternative subjects offered might include the leading Asiatic languages of to day—Persian Japanese Hindustani Chinese or Burmese Botany (with special relation to the Indian flora) and Zoology (with special relation to the Indian fauna) the Anthropology and Ethnology of Asia (with special regard to the religious beliefs of India Burma and Muhammadan Asia) the Indian code in Law and the history of Asia The additional and alternative subjects for a Colonial career would be the Botany and Zoology of our Crown Colonies and Protectorates likewise their Anthropology and Ethnology and as regards languages three or four of the leading African tongues should be selected together with Malay modern Arabic modern Greek and Portuguese It would also be advisable when proper histories dealing with our Crown Colonies and Protectorates have been written and published to add a course of this Colonial history as an obligatory subject

British Officials in Egypt Lastly there remains the scarcely recognized service of British officials in Egypt and in the Sudan which in the coming re organization of our Imperial Services ought to be assimilated with Colonial administration Egyptian appointments at present are made direct by the Foreign Office after a consultation with the British Agent and Resident in Egypt but the Sudan Civil Service which is more directly of British composition is understood to be under the control of the British Governor General of the Sudan, who gives his nominations to candidates on the advice of some consultant body at Oxford The candidates at any rate seem to be invariably Oxford graduates and the curriculum of their examinations has been criticized as not being specially applicable to service in North-East Africa When the Colonial Office has been reconstituted and placed on a more businesslike footing and when the exact positions of Egypt and the Sudan are clearly defined as integral portions of the British Empire the methods of selecting and appointing the British officials therein should be assimilated with those of the Foreign Office and Colonial Office

The Home Government of the United Kingdom has of course no appointments whatever to make in the great Dominions and self governing daughter nations other than that of the supreme head of such a Government

With regard to special subjects for examination at the Board of Trade and Ministry of Agriculture candidates for appointment besides passing in the obligatory subjects forming the ground work of all these State examinations should like the others qualify in two at least of a list of alternative subjects Certainly one such subject for the Ministry of Agriculture should be Botany in its practical application to agricultural and horticultural questions and such Zoology as dealt with fisheries domestic live stock and the invertebrate foes of vegetation besides Chemistry and Meteorology The Board of Trade should lay especial stress on the study of modern European languages (adding to those already listed the Dutch and Scandinavian tongues) it should require careful study of the laws of copyright and of patents and should place Chemistry Metallurgy and Electricity amongst its specialist subjects

Qualifications other than Educational Finally all candidates of either sex for any appointment whatever under the Crown should be expected prior to examination to have undergone some form of military or naval training in the case of the men and of Red Cross first aid training in the case of the women and all should have been encouraged to learn shorthand and typewriting

It would be a wholesome rule if in future no male candidate were appointed to the careers I have enumerated who had not put in at least two years service in the regular Army or Police in some Territorial or School Cadet Corps or two years service in the Royal Naval Reserve or in the Royal Merchant Marine (as it ought to be styled)

Now that the Empire is being re organized after the Great War we must determine to break through what remains of patronage nepotism and privilege These influences have done so much in the past to stultify the value of our public Services both at home and abroad All appointments must be dependent on successful competition but that is not to say that all and sundry shall be permitted to compete Candidates before they can obtain permission from the heads of our great Departments of State must first go before Boards of Selection To some extent, the antecedents of their parents must be a matter of discreet inquiry so that the Board may feel assured that the candidate comes of wholesome stock no matter how lowly in station A good physique to start with should be an indispensable condition for a Government career The nation should wish to employ in its service the pick of the nation both in young men and young women Once the nomination or permission to compete is obtained from

these Boards of Selection—and the appointment of such Boards would go far towards abolishing Parliamentary, political and society jobbery—preparation must be made to pass within a reasonable limit of time the State-appointed examinations in subjects suited to the particular branch of service which the aspirant desires to enter

In an ever-increasing manner we are all of us, now servants of the State Each boy and girl now growing up will serve the State (unless he or she is a criminal) in some capacity Every honest trade and profession serves the State The artisan who goes out to work machinery in Mexico or Bolivia, or Afghanistan serves the State in his own capacity just as much as the British Minister or Resident representing our Government in such countries It is therefore necessary that the whole of the State education whether given at the miscalled public schools or the State schools or the private proprietary schools should be adapted to the State service and, although there will always be room for a few posts of minute historical research which may present opportunities to those still anxious to burrow in the classics of Rome or Greece although the Higher Mathematics will always be of supreme necessity to a few great thinkers to naval officers to the master minds in astronomy physics and engineering—yet for the bulk of the nation what is wanted to begin with is a simple and solid groundwork of education in Geography Modern History Hygiene a little Astronomy Anthropology and Ethnology Practical Botany and Zoology, Arithmetic Shorthand Type writing and Handwriting the English Language—its history its present condition its proper pronunciation and its application to all forms of mind expression an insight into the laws of our land their reasonableness and unreasonableness, and a study of French which will prove a passport to much understanding of the other European peoples

Armed with such a preparatory education, the schoolboy will easily pass into the student qualified to specialize for any of the branches of State service in the British Empire in foreign countries, or in those departments of State that direct from London our relations with countries abroad

H H J

PUNCTUATION, HOW TO TEACH.—Usually, the putting in of stops does not come up as a separate subject of school instruction but is taught in connection with exercises in English composition This is not very satisfactory since it fails to take the question rationally, the practice being to formulate a few rules uncertain in their application and out of touch with any general theory

Punctuation should be regarded—and taught accordingly—as an aid to finer expression in the written word, and in this respect is but a last outcome of the consistent and continuous effort to make the communication of thought complete and unambiguous We shall thus proceed with (*a*) logical and (*b*) rhetorical purpose in the main, but, finally in the making-up of a book—in the title-page the headings of sections and chapters and manifold devices of type and sign to show more exactly the meaning of an author and the subordination of importance of parts—the aesthetic side of the printer's skill must not be forgotten The school however may deal almost wholly with *the expression of the meaning of what one has to communicate to another*, this involving (*a*) a logical setting forth in orderly sequence with suitable arrangement of parts and (*b*) a more exact indication of what is chiefly rhetorical—pause, emphasis, and inflexion

The method should be heuristic The teacher and pupil together shall " find out " the prominent conditions They will soon pass over (i) the need of an understanding between writer and reader as to the interpretation of arbitrary symbols and ultimately of a scheme of stops and other signs, and (ii) the acceptance of what we have now as our conventional punctuation And just at this point comes in the particular teaching of stops, and of stops rather as variables than as fixed quantities—the *logical* and *rhetorical* use in mutual action and reaction The *period* or *full stop* is of greatest separation the *colon* of less separation connecting sentences of equal logical rank, the *semicolon*, having in origin subordinate relation to the colon, but in present function almost identical the *comma*, of least separation and all of them used in pairs—as the *dash* (and *bracket*) are—in parentheses of greater or less rhetorical force Examples from standard authors must be constantly explored and the punctuation observed as indicative of the individuality of the particular writer or of his immediate purpose As the logical or rhetorical side is upper most there will be a smoother or more abrupt style, with a greater or less use of the stops of greater separation

A E L

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LOVELL, A E *Punctuation as a Means of Expression*

PUNISHMENT, THE HYGIENE OF.—School punishments should leave no permanent ill effects on mind or body All forms of punishment that depend for their efficacy on the strength of certain instincts should be given with the utmost care The efficacy of solitary confinement as a punishment depends entirely on the craving of the normal human being for the company of his fellows, unintelligent and too frequent recourse to this and similar modes of punishment may have such far-reaching and complex mental after effects that it may compare unfavourably with the more brutal, old-fashioned corporal punishment

Corporal punishment is seldom effective, except perhaps with very young children in whom the sense of wrong doing is still undeveloped Its physical dangers are obvious The head is very susceptible to injury Pulling and boxing the ears may disfigure the auricle and may even damage the inner ear and cause deafness A blow on the head may produce bleeding of the surface of the brain and may have serious consequences Blows on the legs or arms sometimes injure the joints or bones (especially the shin bone) A blow on the back with a rigid instrument may lead to spinal injury The use of hard, rigid instruments for inflicting punishment on the hands is to be deprecated, for they sometimes injure the slender tendons and small bones (especially in the region of the joints) The buttocks are less liable to injury than any other part of the body The skin there is fairly sensitive, and below it is a thick cushion of muscle and fat, while deeper still is a strong bony framework S D

PUPIL TEACHER SYSTEM, THE.—The Pupil Teacher System is a means of building up and maintaining on a basis of apprenticeship a supply of professional teachers Its formal adoption in this

country (1846) was due to Kay Shuttleworth (*q v*) who regarded it as a temporary and opportunist measure for improving the standard of school work by replacing the "monitor" by the more mature "apprentice" and for gradually creating a body of efficient adult teachers It was a development of monitorial practice (*q v*) for it extended and systematized the custom which had grown up in the better monitorial schools of employing paid monitors It is worth noting in passing that John Brinsley's "sub-doctors" (1612) were potential pupil teachers and "apprentices" existed at Ackworth School in 1786 Monitor and apprentice alike have stood for efficiency and cheapness in times when a narrow view of schooling has prevailed Each has occasioned misgiving as more attention has been attached to *personnel* and less to machinery A plan which divides the attention of young people between studying and acquiring and practice in teaching is liable either to sacrifice the years when intellectual capital ought to be built up for superficial skill in class management or else to make responsible teaching experience impossible

As originally established the master (mistress) of a school under Government inspection selected and apprenticed to himself a certain number of the best boys (girls) at 13 years of age for a period of five years Their salaries were paid by the Government and the master received a bonus for suitably training and instructing them Broadly speaking they received 7½ hours instruction a week either before or after school hours and were occupied during the 5½ hours of the school day in teaching or some kindred activity On completing their apprenticeship they might pass by examination into a training college or become "assistant teachers' Later (1862) pupil teachers were articled to the school managers who paid their salaries and the bonus to the master was abolished

The system immediately justified itself by an improvement in the standard of school work Pupil teachers were described by Matthew Arnold (1852) as "the sinews of English primary instruction" Their low educational attainments however constituted a source of weakness and attempts to remedy this laid an increasing burden upon school masters As time went on the practical efficiency of the apprentice suffered by comparison with the work of the "assistant teacher This coupled with the demand for greater scholarship led to a movement (1875) for raising the age of apprenticeship reducing the time spent in teaching and establishing Pupil Teacher Centres to continue the general education of these young people These reforms were gradually effected and by 1886 central classes were springing up rapidly all over the country

Opinion was now divided between those who advocated higher scholarship and later apprenticeship and those who attached importance to long contact with elementary school conditions and urged early pupil teachership on economic grounds The former view gradually prevailed Candidates with higher qualifications might be articled for two years at 16 In 1896 15 became the minimum age of apprentice ship and the feasibility of superseding the system was being discussed Opportunity for experiment came with the Act of 1902 A four years secondary school course (1907) preceded apprenticeship at 16 and the Bursar and Student Teacher (*q v*) came into being Results soon showed that the pupil teacher system in some form was necessary to maintain the supply of teachers and that more elastic conditions of entry both in town and country were essential The serious shortage of teachers (1920) has resulted in the reopening of Pupil Teacher Centres in certain areas in a movement for attaching pupil teacher courses to the tops of Central Schools and for widening the conditions of entry of intending teachers to secondary schools The extension of secondary school provision will work in the same direction Attention is being given to the variety of attainment—manual and technical no less than academic—that is needed in the schools of to day

C BIRCHENOUGH

PYTHAGORAS (*c* 580–500 B C) —A native o Samos spent much of his life in Magna Graecia (Southern Italy) where he founded a religious or philosophical society which in the city of Crotona acquired for a time control of the commonwealth At the same time he was a man of science and is reckoned as the founder of the science of geometry and the discoverer of the musical octave He was a great mathematician and discovered the theorem that the square on the hypotenuse of a right angled triangle is equal to the sum of the squares on the sides Numbers related in this way are known as Pythagorean numbers (*e g* 3 4 5) His mathematical studies influenced his philosophical system which taught that the ultimate essence of reality was to be sought in numbers To Pythagoras who left no writings little can with certainty be attributed besides the mathematical discoveries and the origin of the doctrine of the transmigration of souls

Q

QUADRIVIUM — (See ARTS THE SEVEN LIBERAL)

QUAKER SCHOOLS — (See ADULT SCHOOL MOVEMENT THE)

QUEBEC, EDUCATION IN — (See CANADA, EDUCATION IN)

QUEEN ANNE'S SCHOOL, CAVERSHAM —(See WESTMINSTER, THE EDUCATIONAL CHARITIES OF)

QUEEN'S UNIVERSITY IN IRELAND —(See IRELAND THE NATIONAL UNIVERSITY OF)

QUEENSLAND, EDUCATION IN —Primary Education At the separation from New South Wales in 1859 primary education was under a National Board but in the following year the establishment and administration of schools were placed under a Board of General Education In 1876 the Department of Public Instruction was

created and since the Act of 1910 when the compulsory age was raised from 12 to 14 and attendance required on each day the school was open the position of primary education has been similar to that in New South Wales No regular course of handwork or domestic science except needlework, has yet been attempted In the more sparsely settled districts itinerant teachers are employed to go from house to house in 1913 there were seventeen who covered an area of 512 000 square miles and paid on an average rather more than two visits to 846 families with 1 893 children The percentage of women teachers in the whole service is 60 A medical and dental department has been instituted the former consisting of two full time and thirteen part time doctors and one ophthalmic inspector and the dental staff of a chief and two assistant inspectors

Secondary Education Previous to 1912 secondary education was either in private hands or carried on in the grammar schools of which there are six for boys and five for girls These receive an annual subsidy from the Government of £750 each together with £250 for district scholarships but they are virtually independent of State control although examined by the Inspector General In 1912 however six high schools were established at the cost of the Department and conducted under its regulations while a system of scholarships from the primary to the secondary schools was set on foot Education in the State high schools is free to all who pass the qualifying examination During the first two years the course is the same for all pupils but in the last two years it is differentiated into general commercial or domestic the curriculum for the general course leading to the university The enrolment at the grammar schools in 1918 was 1 204 and at the high schools 1,440

Teachers' Training Not until 1913 was any provision made for the professional training of teachers except that to be obtained through the pupil teacher system but in this year a Teachers College was established in Brisbane in close connection with the university Training courses of two years for primary and three or four for secondary teachers have been arranged while shorter periods of six months are allowed in the case of those proceeding to small country schools

Agricultural Education Nature study and school gardening are undertaken in a number of the schools and are supervised by the "Teacher of Agriculture' The inadequacy of the provision is evident from the fact that in 1918 this official travelled 8 000 miles but visited only 83 schools No secondary agricultural education has yet been attempted except by means of an apprenticeship system on some of the Government experimental stations but a proposal is on foot to establish a metropolitan farm school on a site near Brisbane, similar in character to the Hurlstone Agricultural High School Sydney Higher education is provided for sixty residential students at the Agricultural College founded by the Government in 1897 at Gatton about 58 miles west of Brisbane with its farm of 1 692 acres

University Education The Queensland University at Brisbane was opened in 1911 with sixty students and four professors—in classics chemistry engineering and mathematics and physics—besides a staff of lecturers and demonstrators In 1918 there were in all 205 students of whom 50 were external students

The Government grants twenty scholarships, tenable for three years at the university, each of the value of £52 per annum, with free tuition

Technical Education. This has been administered by the Department since 1905 when the total expenditure was £5,460 In 1918 it amounted to £51 496 and during this year there were fifteen technical colleges, with branch classes in thirty one centres The system has been recently remodelled, after the plan adopted in New South Wales

J H H

QUESTIONING.—Questioning is essentially a means of acquiring information In a child, it is one of the clearest signs of mental alertness The questioning age, which commonly begins about the fourth year is a critical period for mental development Careless treatment of the questions of a child may lead to the formation of bad mental habits It is advisable as far as possible to answer his questions, but with discretion Intelligent and patient investigation must not be discouraged by lightly answering every question A child should be encouraged as far as possible to answer as well as to ask his own questions, otherwise he develops the habit of looking to others for answers to his inquiries and loses initiative Idle pointless questioning is encouraged by answering any and every question On the other hand, refusal to reply deprives the child of the guidance necessary to avoid waste of time and energy

As a teaching device questioning tests knowledge and stimulates thinking In using it to discover a child s stock of ideas considerable skill is required Questions should not be so vague that they encourage indiscriminate guessing nor so narrow as not to provide scope for individuality Nothing is less inspiring than a string of short questions, the answers to which call for nothing more than parrot like efforts of memory

As a means of stimulating imagination observation and thought questioning is invaluable A carefully constructed series of questions calls forth considerable effort in recollection, comparison, and judgment It does more It demands careful expression of ideas for the obscurity of one's ideas is generally reflected in the language in which they are expressed This has led some teachers to demand that all questions should be answered in complete sentences—a practice which is open to abuse It is somewhat pedantic to insist that in answering the question What is the capital of France ? " a child should not be allowed to reply "Paris," but must be taught to say 'Paris is the capital of France

Some subjects (*e g* mathematics and the natural sciences) lend themselves more readily than others to development by questioning but too much stress need not be laid on this for wherever thinking is to be done thought can be stimulated by carefully selected questions The skilful use of questions is the supreme test of a teacher's efficiency It demands a thorough knowledge not only of the subject under discussion but also of the student, and a nice judgment in selecting topics and forms of expression The teacher must know the extent of his pupils' knowledge the images thoughts and feelings that will probably be excited by his questions, and the mental efforts of which they are capable S D

QUESTIONS, ARITHMETIC.—(See ARITHMETIC, TEACHING OF)

QUICK, ROBERT HEBERT (1831–1891) —Is best known and will be chiefly remembered as the author of *Educational Reformers*, though he rendered other important services to education As a practical (and reforming) schoolmaster, he taught in no fewer than seven schools including Harrow (1869–1874) and two private schools of his own His writings include *Educational Reformers* (1868 revised 1890), critical Introductions to the first English reprints of Locke s *Thoughts concerning Education* (1880) and Mulcaster s *Positions* (1888), two little books on the *Essentials of German* (1882) regular contributions to the *Journal of Education* and, in some senses most characteristic of all a detailed Diary of the last thirty years of his life This diary has never been published but Mr Francis Storr s *Life and Remains of Quick* (1899) contains some 500 pages of revealing extracts As a lecturer his most notable achievement was a course on the History of Education delivered at Cambridge in 1879 for the newly appointed Teachers' Training Syndicate This was the first recognition of education as a "subject by any English University and marks an epoch

Quick was ordained in 1855 but some three years later he resigned his curacy to become a schoolmaster It was not till 1883 on his appointment to the living of Sedbergh that he resumed full clerical work But in 1887 he again resigned in order to devote himself to educational writing

In a criticism of an earlier *Cyclopaedia of Education*, Quick writes ' In many cases the writers find room for quite unimportant particulars about a man s life and omit to say what use he was to education ' Here there shall be no such omission though "use to education is a problem of many unknowns In Quick's case two services at least are clear a contagious faith and a tireless devotion to experiment and exposition He is not so much original as interpretative and appealing His writings are [illegible]ing summaries of the work and thought of others

Of practical reforms perhaps he had most at heart the training of teachers A passage in the Diary illustrates his position "First we want men of insight he says ' to examine into the true theory of education—that is as I understand it to inquire what human beings ought to become and how much of this may be effected by education

Next we want men who will make it their business to find out what course education is taking in other countries Lastly we want men to show us how best to do what we are now trying to do

Educational Reformers opens with Arnold s words "It is clear that in whatever it is our duty to act those matters also it is our duty to study That is the burden of Quick s message (and legacy) to teachers and he would perhaps have been content to gauge his own ' use ' chiefly by his success in convincing them

Of that success there is one conspicuous instance It was to Quick that Edward Thring dedicated his own *Theory and Practice of Teaching* and afterwards wrote these memorable words ' You are the only man I have met with who has not been a mere partisan in education who has not looked at it through professional spectacles of more or less self interest . but has quietly looked and thought about what is best" J R

QUINTILIAN, M FABIUS.—Was born (*c* A D 35) at Calahorra (Calagurris), a small Spanish town on the Ebro He was brought by his father a rhetorician to Rome and studied under Domitius Afer and other masters of rhetoric He returned to his native town and in A D 68 came back to Rome with the Emperor Galba In A D 79 he became a State teacher of rhetoric receiving a salary from Vespasian for that purpose The younger Pliny was one of his pupils He was the greatest authority and influence on education in his own day and his influence extended in the succeeding generation whilst as a writer there is no one who has affected general educational principles so widely as Quintilian particularly at the time of the Renaissance From being a rhetorician Quintilian became a consul as Juvenal mentions by good fortune and he also the same writer says became rich Juvenal also applies to him the term *felix et sapiens et nobilis et generosus* and as Juvenal is bemoaning the corruption and degeneracy of the age there is no reason to doubt that Quintilian was a striking exception

Quintilian s educational opinions are contained in the *Institutiones Oratoriae* which was written after he was 50 years of age and after he had been engaged in teaching rhetoric for twenty years Hence it is the outcome of great experience though it is said to have been completed in two years

Educational Ideals As Plato includes a full scheme of education whilst writing a work on political philosophy Quintilian supplies a complete educational treatise within a system of rhetoric To make such a treatment permissible he identifies the good orator with the good man The *summum bonum* implies the effectiveness in active practical life of the man who is ethically good and for this the power of adequate expression is clearly necessary if the good man is to be able to influence others Moreover the good man is clearly imperfect if he cannot provide such adequate means of expression —spoken written and in readiness of action—as to convert his good intentions into solid stable active results Hence Quintilian argues the *bonus orator* must be identified with the *bonus vir* As Professor Laurie says Quintilian despises mere *facultas dicendi* The ideal of the practical man of affairs includes the cultivation of every power and every virtue of the mind Hence in the training of the orator, early or preparatory education will prove of vital importance To this subject Quintilian devotes his first book The second book deals with the elements of rhetoric books three to seven are concerned with *Inventio* books eight to eleven treat of elocution or style including memory and pronunciation and lastly the orator s personality and powers of pleading are considered

Quintilian is the strong advocate of care as to right choice of teachers for the sake of morals and correct speech He recognizes the power of imitation and habit as clearly as Locke Boys should begin with Greek before Latin though Latin should follow quickly and the two should be continued together Education begins from the infant stage but demands appropriate methods according to age disposition, and ability of the individual child The letters of the alphabet should be taught by playing with ivory figures of them and writing by copying good specimens in lines conveying moral lessons There should be no hurrying in teaching Learning by heart is encouraged, and distinctness and clearness of pronunciation insisted upon

Quintilian advocates public, in preference to private, education on account of competition, mixing with those of like age and the noticing of correctness and error in others and particularly by imitation of other more advanced pupils Yet Quintilian protests against hurry It is as natural for the rightly trained child to be ready to learn as for birds to fly and horses to run Teachers must adapt themselves to the minds of the pupils The attempt to over-stimulate children with instruction is like the attempt to pour water rapidly into a narrow necked vessel He is opposed to corporal punishment

In studies Quintilian regards grammar as the basis The *grammaticus* or elementary teacher, included in his work the teaching of literature In the reading of authors he attaches importance to reading aloud with due modulation He prescribes Homer and Virgil and places limits on tragedy and comedy for educational use Preparatory to rhetoric also is instruction in the ἐγκύκλιος Παιδεία of the Greeks (*e g* music geometry astronomy) The higher studies of style and composition, both oral and written belong to the rhetorician He discusses the qualifications of teachers and urges that the elementary teachers as well as higher teachers should be well qualified Teachers should observe accurately the dispositions and abilities of pupils, and pupils should regard teachers as the parents of their minds

The tenth book contains principles of criticism of style which have become the starting point of all later literary criticism Book eleven gives the summary of what antiquity had to say on the theory and practice of memory In the twelfth book Quintilian expressed his views on oratory as the aim of education and the relations of the trained orators to physics ethics and dialectics (*i e* to philosophy), and identifies the good orator with the search for truth, justice, and liberty in the commonwealth

Quintilian's influence has been traced in the Middle Ages in Cornelius Fronto Cassiodorus, and in Isidore of Seville but the close and sustained study of his *Institutes of Oratory* began after the discovery of the first complete MS copy at St Gallen by Poggio Bracciolini in 1416 P P Vergerius was the first Renaissance educationist to write an introduction to Quintilian's educational work

Professor W H Woodward, after noticing that Quintilian was the educational authority for Vegius, Poggio, Guarino Vergerius, Palmieri, and Alberti adds 'Every educator of the Revival, whether of theory or of practice whether on Italian or Teutonic soil Æneas Sylvius or Patrizi, Agricola Erasmus Melanchthon or Elyot (he should have added Vives who was styled 'the second Quintilian') steeped himself in the text and spirit of the *de Institutione oratoria*' F W

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QUITO, THE UNIVERSITY OF —(See ECUADOR EDUCATION IN)

R

RABELAIS, FRANÇOIS (1483–1553) —He was born at Chinon in France educated by Benedictine and Franciscan monks and enthusiastically took up Greek studies In 1524 he became a Canon Regular in Poitou and made the acquaintance of the family of du Bellay who afforded him protection from persecution for his opinions He was however compelled to retire to the south of France and at Montpellier he graduated in medicine and took up public teaching When the University of Paris obtained the suppression of the privileges of the medical school of Montpellier Rabelais was sent to Paris to plead on behalf of Montpellier and succeeded in obtaining the establishment of the faculty of medicine there Rabelais produced his great works *The Life of Gargantua* and *Pantagruel* during the years that followed his studies at Montpellier The former is a fantastic story associated with the name of a giant familiar in the folklore of northern and western France This giant of enormous size strength and appetite partly the invention of Rabelais and described with clever but coarse wit is used as an instrument in his satire on the old dead routine of education, low cunning in statecraft, greed in war, and false estimates of human glory

RACE PROBLEM, EDUCATION AND THE.— The keynote of modern life is service Children must be trained from early childhood to realize that the truest happiness they can know originates in a friendly and helpful relation with other people It is of course true that most boys and girls have their way to make in the world and that a certain amount of competition of the wholesome kind is useful in enabling them to discover and develop to the utmost the faculties they possess On the other hand individualism has in most civilized countries accomplished its mission and we need to inculcate in the youth of our Empire the principle that self development proceeds more surely by self sacrifice than by self seeking I do not suggest that this can be accomplished all at once but it must be accepted as a principle The spirit of service is the first of the great principles on which Imperial education should be based and it should be made apparent that true knowledge comes more quickly when faculties are exerted for the sake of others than when they are brought into play merely for individual advantage

Tolerance Our Empire is not fortuitously composed of many races and many nations Behind is a divine purpose, and this consists in training

mankind to understand that, while the forms of life may be many the spirit of life is one Within the Empire men and women of varying faiths are being through increasingly close association and interdependence, gradually taught to understand one another to appreciate the value and force of one another's motives It is vital that we should train the youth of the Empire not merely to practise their own faiths and customs more selflessly but also to gain an intelligent understanding of, and therefore respect for, the convictions of those who view life from a different angle We see every day the mischief of political antipathy but far worse is the mischief of religious animosity due primarily of course to an ignorance of the essential unity of all life however divergent the forms In every school and college throughout the Empire instruction should be given not only in the faiths and conventions to which the scholars normally belong but also in the faiths and conventions held by their fellow citizens in other parts of the world It is an undoubted fact that there is no loss of intensity of religious conviction when training is given in the principles of other faiths and what is gained is an increasing sympathy for those who are growing along other lines That the spirit of tolerance and understanding needs to be far more widely spread is evidenced by the fact that our relations with India are by no means as satisfactory as they should be If the Hindu the Mohammedan the Parsee and the Christian—all represented in the great continent of India—could more clearly realize the contribution that each can make to the welfare of the whole that great dependency would become an infinitely more powerful factor in the well being of the Empire than is at present possible If the Empire is to accomplish what is one of its ideals—the recognition of the one divine source of all great religions—a beginning must be made in schools and colleges to train the citizens of the future to a greater realization of their responsibilities than has been vouchsafed to the elder generation of to day

Enthusiasm The third great principle is the spirit of generous enthusiasm Enthusiasm is needed for individual hopes as well as for national and Imperial ideals It is the task of the teacher to inspire both concrete and abstract enthusiasms Young people are doubtless taught to throw themselves with vigour into their personal careers They are also doubtless taught to reverence the Motherland and its vibrant history They must also be taught that an Empire has ideals and traditions as well as a nation The difference of races and the consequent differences of religions and customs are not intended as barriers but as examples of the many forms illustrative of God s majesty We have to train the future citizen to extend his enthusiasms beyond the personal limit beyond the national limit and into the Imperial ideal To do so we must train him to look with reverence on the traditions of nations and races other than his own We need an Imperial tradition behind us as much as we have an Imperial future before us The boy or girl who while turning in supreme devotion to his or her own great spiritual Leader can also bow in reverence before the Great Ones to be found in other faiths is growing in the spirit of true citizenship Our Empire offers us more heroes than any nation possesses by itself and we need to learn to look with enthusiasm upon the great company of Heroes who stand behind the Empire as a whole because they have sent their respective races and nations to become its component parts We have to learn to understand that no virtues are truly noble or pure unless they are shared and unless they help others to that joy of life which we ourselves experience in our moments of enthusiasm In the earlier stages of evolution, people s enthusiasms were restricted to the family, to the tribe We are beginning to learn the measure of national enthusiasm The young have to add to their enthusiasm for the Motherland the foundations of an eagerness for the welfare of the Empire as a whole

We live under the sway of one Emperor under a common citizenship under the protection of one flag let us carry this spirit of unity among the forms which at present divide us We must insist with all our power upon the need for inculcating the paramount importance from all points of view —personal provincial national Imperial international—of guiding our lives in the spirit of service in the spirit of understanding in the spirit of generous enthusiasm C S A

RACIAL EDUCATION IN THE COLONIES — From a very early period in the history of European colonization a certain responsibility seems to have been recognized by the colonists towards the aborigines This was not at first understood as involving more than the obligation to make Christians of them (sometimes more or less by force) but missionary activity usually though not invariably implied some amount of elementary education The Capuchins and Jesuits who evangelized Portuguese West Africa seem to have contented themselves with the most rudimentary instruction in Christian doctrine but as we hear of native priests and even of a native bishop it must be supposed that some pupils at least were carried on to a more advanced stage The Dutch settlers at the Cape began to establish schools for Hottentot and slave children as early as 1656 and we hear of collections in English cathedrals for educating Indian children in Virginia during the reign of James I

Some mission schools have been assisted by small Government grants but the expense is chiefly met by voluntary contributions coming more and more from the natives themselves Some missions prefer to forgo the grant rather than be hampered by official regulations

In the German colonies mission schools received a regular subsidy from the Government and undenominational Government schools were established chiefly with a view to training lads for subordinate posts in the Civil Service

In the French colonies efforts are made to extend to the natives as far as practicable the system of education prevailing in France Elementary instruction is supplied free by Government schools but in recently acquired dominions these have not yet superseded the mission schools

The problems of native education vary with local conditions and with the requirements and desires of the particular people in question Hitherto they have usually been approached either from the standpoint of the philanthropist who while genuinely desirous of benefiting the native believes that the best way of doing so is to Europeanize him as far as possible or from that of the settler who regards the indigenous population only as a reservoir of unskilled labour, and is opposed to all attempts

at educating them Among these last, we may include those whose attitude is friendly but who are honestly convinced that education "spoils" the native—a view not without excuse if we consider (1) the superficial and useless character of much which has passed for "education' but has had little or no effect beyond ministering to self-conceit and (2) the denationalizing effect produced whether intentionally or not by the influence of some among the best and most conscientious teachers It is coming to be recognized that education to have any real and fruitful influence on character must be built on existing foundations and that the attempt to uproot previous ideas and start with a *tabula rasa* not merely is impracticable but implies an utterly mistaken ideal Such attempts when most successful—and they do not necessarily result in demoralization though this is only too apt to follow the destruction of old standards and the imperfect acquisition of new ones—tend to produce a being of somewhat negative and lifeless virtues who never seems quite natural like a man who has forgotten his own language yet never quite mastered that which he habitually speaks

The Place of European Methods The assumption that the European way is the only way was naïvely put forward by the Virginian colonists when they offered to educate some Indian youths along with their own sons The courteous and dignified reply of the chief on this occasion as recorded by Dr Eastman shows that the Indians at any rate were by no means prepared to accept this assumption Circumstances however have compelled them to modify their point of view and the most progressive Indians have adopted the English language with more or less of the mode of living common to all civilized Europeans—not so much because they feel them to be intrinsically the best as because this was the only course open to them if they would maintain their footing at all This seems also to a certain extent to be true of the Maoris who were said at one time to be perishing as the country filled up but have survived by adapting themselves to the ways of the majority

The case is different in Africa Here in general we have vigorous and prolific races—sometimes occupying a country conjointly with white colonists in other cases inhabiting regions where only a minority of white men can be even temporary residents We may have to do with settled agricultural peoples with pastoral nomads or with broken and harried tribes eking out a living in mountains and forests With some it is a question of granting their demands for education with others of inducing them to accept any instruction at all

Where there is any opening for elementary education it has in most cases been taken advantage of by some missionary body Such agencies as a rule follow the wisest course in keeping in the early stages to the vernacular, reserving English for the most advanced pupils chiefly those who desire to become teachers M Junod an eminent authority insists on the importance of the vernacular its potentialities as an instrument of thought and the danger of inducing (unconsciously no doubt) a contempt for it in the minds of the most intelligent natives

At the same time English must be the medium of the higher culture as Latin was for Europe in the Middle Ages Some sections of West African population (chiefly owing to the artificial conditions introduced by the slave trade and its *sequelae*) know no language but English to their own present loss as regards intellect and to a certain extent, character also What may be the ultimate outcome of this state of things one cannot foresee Should the use of English become permanent, we may expect that, with the development of a healthy national life, the language will be as completely transformed as Latin has been in France and Spain The rule should be never to force the study of English, and never to withhold it where really desired

The Attitude of Education towards Tribal Life. The subject of industrial teaching is intimately connected with the attitude which education should take up towards the tribal life This it is now seen is not an evil to be got rid of at all costs nor even necessarily a "childish thing' to be left behind as quickly as possible Where its institutions still exist in undiminished force care should be taken that the general tendency of the teaching may reinforce rather than oppose them Above all no attempt should be made to undermine the authority of the chiefs and elders The teaching should be such as to fit lads for taking their place in village life and must therefore vary with individual needs English may be useful for teachers and for chiefs and headmen who come much in contact with the authorities others will scarcely need it Highly specialized trades suited to the requirements of civilization will of course be out of place And even with regard to improved agriculture and house building a little caution is necessary The improved house on the European model is often less sanitary and convenient than the grass huts evolved through many centuries of adaptation to the climate and the zealous would be introducer of steam ploughs sometimes finds that the hoe is—in the particular local conditions of the soil and the people—the more satisfactory instrument of cultivation

A knowledge of the people and their customs (not always to be attained by anthropological studies though these too are valuable), a sympathetic attitude and an open mind are all essential And experience will show how large a part of the policy pursued will consist in wisely letting alone The desires of the natives themselves may sometimes give the lead to the educator

Where tribal institutions are breaking down or have been wilfully destroyed education will follow the line of assisting the native to adapt himself to the new order of things though sometimes what is needed seems rather to be the removal of barriers than the provision of steps In South Africa for instance there is a large and increasing body of intelligent and—up to a certain point—educated natives who fully understand the nature of representative institutions and have shown themselves (in the Cape Province) fully able to make use of them Their facilities for higher education are very limited They are not admitted to the Cape University and Lovedale does not take them up to the university standard Some find their way to London a larger number to the United States Before the Union a scheme for an inter-State native college supported by Government was being agitated it fell into abeyance and was finally carried out on a limited scale by private (*i e* missionary) enterprise natives contributing no

inconsiderable part of the funds The future of the South African Native College at Fort Hare will be watched with great interest A WERNER

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RADEWYNS —(See BRETHREN OF THE COMMON LIFE)

RAFFIA WORK, THE TEACHING OF —All who have any knowledge of kindergarten handwork and simple basketry will know how satisfactory raffia or "bast is for manual purposes It is soft and pliable cheap readily prepared and the natural raffia can easily be made any colour by the simple dyes on the market The work can be graded from the simple winding of the lower infants classes to the advanced basketry of the senior departments A short summary of the way in which this may best be taught is given here and comprises winding plaiting and coiled basketry (For Raffia Weaving see article entitled TEXTILE WORK THE TEACHING OF)

Raffia Winding Cardboard foundations are used and the raffia is soaked or smoothed out into flat strands Arrange the strands as nearly as possible of the same width the finer ones being put on one side for raffia sewing A serviette ring may be easily made by winding raffia evenly round a small cylindrical shape Avoid knots Begin by holding the end firmly with finger and thumb of the left hand and gently winding the raffia over the card with the right Joining may be effected in a similar way and when the cardboard is well covered the end may be tucked under the preceding strands A piece of coloured ribbon or raffia may now be placed around the ring and tied in a bow

Gas mantle boxes book covers and cardboard boxes may be pressed into service for the requisite foundations Photo frames are made by winding raffia round a square or oblong foundation having a centre hole for picture When this is completed a fine plait of raffia can be sewn around the border for ornament and to give stability and then after the picture has been put in a piece of cardboard can be pasted over the back and a strut attached Hair tidies paper racks mats, boxes, may all be made by winding raffia round cardboard foundations, and then sewing on bases

Raffia Plaiting and Sewing. Plaiting is one of the earliest of arts and is always of great interest to little children The raffia should be arranged in strands of equal thickness and new strands introduced as necessary according to length of plait required The raffia should be smoothed out to facilitate working After the simple three plait has been learnt the four five and six plait might be attempted Coloured strands might be introduced for ornamentation To start the plait knot several pieces according to thickness required and with loop thus formed attach to end of desk by drawing pin or to the ink well hole or to any pegs or hooks that may be in the room This gives a firm hold for work Endeavour to keep plait even by inserting new strands from time to time The strands may be sewn together with needle and very thin strands of raffia to make various objects—mats doll s hats frames basket handles baskets bags tidies tea-cosies and other useful objects Whips skipping-ropes chains may be made of long lengths of plait the ends being teased to form a fringe for the former

Raffia Basketry Coiled basketry is an occupation in itself but a brief description may be of use here It is rather too difficult for little children but is a very interesting subject for handwork for senior schools (8 to 14) Cane or strong strands of raffia are needed for the basis and the raffia is worked round this into various objects by means of coils sewn together The stitches most in use are the Lazy Squaw the Mariposa the Lazy Weave the Figure 8 and the Samoan Stitch the first being the best known and most used Cut the end of the cane flat for about an inch take the tapered end and coil round into a loop Catch up with needle threaded with raffia to make a button and over sew it to make a small circular foundation Wrap strand round the cane and then round the cane and through the hole of button and thus work along in spiral fashion Keep the long stitches straight and pointing to the centre of the button like spokes of a wheel Continue wrapping round single cane and then through the row beneath until the base is large enough for object In order to raise the sides raise the cane to top of last coil instead of round it and pull the raffia tight when making new stitch working from the outside of object As the cane is pliable the shape may be varied at any round to suit the object required To finish shave the end of the cane and work the last portion as part of the previous row To join cut the old edge of cane as for beginning and also new piece the cuttings dovetail to form a continuous strand

An oval base can be made by bending for 2 in and working in and out with raffia to make a firm strip of cane and then continuing to coil round this the result being an oval

Hats baskets vases pot covers tidies mats pin cushions and also a variety of interesting objects useful in general lessons—such as Indian cradle canoe sledge snowshoes travs carriage and cart—may all be made in coiled basketry Patterns may be worked in fancy stitchery or coloured strands may be introduced at various points in the weaving to form patterns

Raffia work is very satisfactory for children as it is soft pliable clean develops the sense of touch,

exercises judgment and ingenuity, and satisfies the creative impulse J E T

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RAGGED SCHOOLS —The term "Ragged School" destined to become historic, was adopted hastily in 1842 to give point to a public appeal for funds by Mr S R Starey then hon secretary of a school just started by a City missionary in Clerkenwell The advertisement caught the eye of Lord Ashley who felt at once that it was exactly what he had long desired His intervention brought about a conference of those interested, leading to a formal request that he should become President of a movement so full of promise for the poor neglected children of all large centres of population Hence was formed, in April 1844 the "Ragged School Union with the seventh Earl of Shaftesbury (to which title he shortly succeeded) as President—a position he occupied with unflagging interest until his death in 1885

Objects The object of ragged schools as stated in one of the earliest building trust deeds was "to chase away ignorance to relieve distress and to teach the Gospel , in short, elementary education on a broad religious basis Allied to this was the desire for cleanliness sobriety industry, and thrift Charles Dickens was among the first to lend his powerful aid Many others joined the movement notably the Rev Thomas Guthrie, D D , of Edinburgh who did much by his writings and speeches to advance the cause Quintin Hogg and General Gordon were also zealous workers The Prince Consort and Queen Victoria sought for information and evinced practical interest by a substantial contribution Her Majesty became the patron of the Society being succeeded by King Edward and by King George Queen Mary and Queen Alexandra at the present day Every city and big town soon had its flourishing ragged schools there being "Ragged School Unions" founded in Liverpool and Manchester The movement also extended to Australia and Tasmania

The rapid growth of these schools is indicated by the fact that in the Twentieth Annual Report of the parent Society there were 187 day schools in Greater London with an average attendance of 18 677 children Around the day school other agencies sprang up to meet the crying needs of the scholars Many were destitute so clothing and boots had to be obtained hunger was rampant so meals had to be provided, being cooked mostly on the school premises Some of the children were homeless for whom temporary provision had to be made often in an adjoining room designated a 'Refuge" Such was the simple beginning of what are now those great industrial schools in the United Kingdom which were later taken under the wing of the "Reformatory and Refuge Union" Much difficulty was experienced in getting pariah children into respectable industrial pursuits To meet this, in 1851, John McGregor well known as "Rob Roy," originated the Shoeblack Brigades, in imitation of what he had seen on the Continent These proved a stepping-stone to usefulness and respectability to hundreds of poor lads There was also initiated a scheme for prize-giving to encourage good conduct and faithfulness in service on the part of elder lads and girls

Emigration to the Colonies was also successfully introduced Lord Shaftesbury secured the co-operation of the Government, which granted free passages to selected scholars from ragged schools to Australia during the years 1847 to 1849, with the most satisfactory results Every school had its Sunday school, and there followed Bible classes, children's services, penny banks, bands of hope, and other auxiliaries such as coal, blanket, slate, and goose clubs Efforts were also made to influence the homes of the scholars and mothers' meetings quickly spread throughout the movement, and were adopted subsequently by most churches

Modern Developments. In 1870 the first Education Act was passed paving the way for free and compulsory education This had the immediate effect of closing most of the day ragged schools, mainly on the score of inefficient buildings and uncertificated teachers The authorities, however, urged their retention wherever suitable for supplementary agencies, both on Sunday and on week-day evenings

Ragged schools may now be regarded as friendly allies of State education, and widespread social and religious character building work is carried on mostly by men and women imbued with a Christian spirit whose devoted labours could not cease without serious loss to the poor children and their homes

The old fashioned "Day in the Country" was supplemented by the more satisfactory scheme of a fortnight's holiday By the provision of separate holiday homes by the sea and of country boarding out cottages invalid and cripple children enjoyed an invigorating stay in the fresh air

As far back as 1854, a disused ragged school was set apart for a Cripples' Home, which under other management still continues its useful work Cripples, too, were admitted to the Shoeblack Brigades A more extended effort was successfully made in 1890 to form a register of the crippled and handicapped children in Greater London The names and addresses of over 7 000 children were discovered and, by a system of regular visitation with which were associated various ministries of mercy such as the supply of surgical instruments and of spinal carriages industrial training and recreation the lot of the disabled child has been greatly ameliorated

The statistics issued by the parent Society for 1919 give 140 buildings and affiliated mission properties 247 Sunday afternoon and evening schools, with an average attendance of 26 423 9 day nurseries 37 industrial classes 135 institutes recreation classes etc 78 Scouts Boys' Life Brigades and Boys Brigades 3 405 voluntary teachers, 103 special religious services 101 Bible classes, 45 Christian Endeavour societies 96 Mothers' meetings, 26 Temperance meetings and 77 Bands of Hope

There has been a growing antipathy to the term "Ragged School" as being inexact the physical and social condition of the children having so vastly improved To meet this altered state of things, towards which ragged schools have so largely contributed the name of the Society in 1914 was extended to that of "The Shaftesbury Society and Ragged School Union" J KIRK

RAIKES, ROBERT (1735–1811) —One of the earliest promoters of Sunday schools, was born at

Gloucester and being possessed of an ample income derived from the ownership of the *Gloucester Journal* began early in life a career of philanthropy on behalf of prisoners and criminals Tracing ignorance as the source of many crimes he resolved to try the experiment of collecting poor children for instruction on the Sabbath In a notice Raikes inserted in the *Gloucester Journal* on 3rd November 1783 he describes the results of the early efforts of himself and others to improve Sunday which had previously been devoted to "bad purposes and to correct the lawless state of the younger classes who are allowed to run wild on that day free from every restraint Raikes engaged a number of women teachers whom he paid to attend the Sunday schools and to give instruction in reading and the Church Catechism and soon the neighbourhood of his schools was described by the inhabitants as "quite a heaven upon Sundays compared to what it used to be In the afternoons the children were taken to church and the 'little ragamuffins in great numbers took it into their heads to frequent the early morning prayers at seven o clock in the cathedral The S P C K assisted Raikes with gifts of Bibles and other books and the story of his work led to many inquiries followed by imitations in other parts of the country The Sunday School Society was formed in 1785 in 1789 Sunday schools were established in Wales The Sunday School Union (1803) was the direct result of Raikes s efforts

RAMUS, PETRUS (1515-1572) —This is the Latinized form of the name of Pierre de la Ramée a famous French humanist At an early age he devoted himself to the study of philosophy and was so dissatisfied with existing methods that at 21 he declared that all that Aristotle had said was false ' For many years he lectured on philosophy and logic and roused much hostility among the Aristotelians of Paris He published *Dialecticae Partitiones* in 1543 but it was suppressed by royal edict and the author s lectures were prohibited By the influence of the Cardinals of Bourbon and Lorraine Ramus was made principal of the Collège de Presles in 1545 and in 1551 he was appointed Professor of Philosophy at the Collège Royal He embraced Protestantism and after exile from France for three years he perished in the massacre of St Bartholomew As an intellectual reformer he attacked the scholastic method of thinking exposing the uselessness of the subtleties of the schoolmen He wrote lucid works on methods of logic and his versatile mind is shown by the number of his works on other subjects including mathematics astronomy Latin Greek and French grammar and theology The influence of his writings was widespread among thinkers and teachers through Western Europe for many years after his death

RASIS —(See CORDOVA THE UNIVERSITY OF)

RATCLIFFE SCHOOL CHARITY —(See LONDON CITY COMPANIES AND EDUCATION)

RATE AID AND EDUCATION —Rates first came to the help of education under the Elementary Education Act of 1870 The *Imperial* exchequer had made building grants amounting to £20 000, in 1833 in aid of public elementary schools and increasing amounts in years following—but always well under an annual sum of a million pounds—for general purposes of elementary education For the sake of efficiency and economy *local* interest was now to be encouraged by *local* charges The new School Boards were to issue their precept, and get what they wanted from the rating authority It was expected that the local cost would not be high in the hope of Mr W E Forster the Minister in charge of the measure never more than 3d in the £ This might mean usually an Imperial contribution four times as great as the local But Mr Forster was wrong amounts varying from 1s 6d to 2s 6d in the £ have become very general, and in June 1920 the Board of Education did not rule an area as "necessitous in which the local charge on education did not exceed 4s in the £

The free call of the Board Schools upon the rates soon led to an "intolerable strain ' upon the resources of the voluntary schools Unrest and agitation continued and increased and the successive Bills of Mr Birrell Mr McKenna the Bishop of St Asaph and Mr Runciman (*qq v*)—all intended to bring educational peace but all failing to become law—led the way to the Education Act of 1902 (*q v*) This not only brought aid from the rates—on definite terms of public control—to the voluntary system in elementary education but to schools of more advanced grade generally It was now the duty of the local authority to supply or aid the supply of education other than elementary ' The stimulus of this Act has been urgent and the constantly growing content of late years in the accepted definition of education has led to further and increasing call upon the rates till their annual aggregate has exceeded that of the Imperial grants By the Act of 1918 however the Imperial contribution is now guaranteed at a minimum of 50 per cent of the total educational expenditure

A E L

RATIO STUDIORUM —(See JESUIT EDUCATION)

RATIONAL EDUCATION —Education is training for life no narrower definition will convey its full scope Properly speaking it covers the greater part of life and includes the influences of nursery and home of companions and surroundings of business and marriage just as much as those of school and college It is these last however as being those we can directly control that we have specially in mind when we speak of education though we should always be conscious of the large background of other educational influences which surround and complete them

Education is training for life and therefore has a twofold purpose to give a general training for the normal life of a citizen of a civilized country, as well as a special training for the particular career that he or she will follow While the first is the main purpose of the school it is a mistake not to keep the other in view as well at any rate in the later years and both alike rest on the same foundation of powers and habits There should therefore on the intellectual side be three clearly marked stages in a rational system of school training First the preparatory stage (in general from 7 or 8 to 12 or 13) of learning to use the tools physical and mental with which the child must work Then for the next four years a wide course of general training—wide because there are so many powers and interests and kinds of knowledge required for any kind of reasonable life and also in order to give the opportunity of discovering the aptitudes that should be specially

developed in the next stage This comes after 16, when some specialization ought to begin in accordance with the native "bent" and the definite requirements of a future career

Intellectual Training The preparatory stage is essentially the time of learning by doing There is little need now, especially since Dr Montessori has given a new application to the principles of Froebel, to insist on the importance in these earlier years of getting at ideas through actual familiar things and training the brain through the senses and especially through the hand Drawing modelling and constructive work of all kinds are of as much importance at this stage as reading and writing Song dramatic action practical work in house and garden ought to have a large place in the classroom and on the time table and the command of the necessary educational tools will come the more readily and with the more certainty for coming often in the guise of real work or of play rather than of the classroom "lessons which seem to the child to have so little relation to either In this way should be acquired the familiar use of one's own and another language as a means of expression a practical knowledge of arithmetic and geometry the habit of investigation by observation and experiment a love of song and story and some practice of arts and crafts Then comes the second stage in which these things are carried further and studied more formally This is the time for grammar algebra a "dead" language separate branches of science, and a more formal study of history and the arts ideas and their relations being now the main things to keep in view to be reached from many different sides This general course must be wide and varied if only to give every child a chance of "finding himself" and so to reveal in what direction his powers mainly lie and what therefore should be his later more specialized line of work When these have been discovered the final stage is reached and the work must be narrowed and intensified Whatever line is chosen it must not be too narrow the humanities must have a place as well as the utilities Just what can be done is largely decided by the requirements of the professions and of the examinations that give access to them or to the universities A really rational system of education demands a more rational examination of system

Physical Training Only one side that of intellectual training has yet been touched on and if we keep the whole of life in view the others are of no less importance Physical training is usually thought of as a matter of games and gymnastics These are no doubt its first requirements games first and foremost as giving the motive and enjoyment that make exercise most healthful but needing to be supplemented by a complete system of movements such as the Swedish to give more conscious control of the whole body It is a great mistake to let a boy grow up with the idea that games are the only form of healthy exercise when so many forms of useful work can give the same benefit and an enjoyment that will increase instead of diminishing with later years This is another reason for including in the school course much manual work of varied kinds—in garden orchard and farm, in the care of playing-fields in the workshop and the house We must ensure other conditions of health as well and give healthy habits and some consciousness of the laws of health Food clothing, fresh air hours of sleep, all must be taken into account as conducing to this end, and most essential of all, though most frequently left to chance we must see that children grow up understanding their bodily needs and powers and aware of their use and misuse, with reason and feeling alike enlisted on the side of self control

Character Training This brings us to the third side of education, that of the training of character The most important thing about school is its discipline but this does not mean that where discipline is sternest there is the best character training It is not dependence on another's will that must be our aim but the development of self control and this can be developed only where there is real freedom of choice and a considerable amount of self-government We do not want to produce minds that can only take things on authority at second-hand but that will demand that reason shall be satisfied and will investigate for themselves Not that as much freedom can be allowed in the earlier stages as in the later We shall at each stage, give as much freedom as we wisely can and wherever possible in making and enforcing rules appeal to the good sense and good feeling of those who must obey as well as of those who must maintain them and so establish government by consent That a large part of the school government should be in the hands of prefects is now an established custom in English schools and this may in various ways be still further extended by a wide range of school duties And if questions of rules and the school customs that form no small part of its discipline are from time to time discussed by a "School Parliament" containing representatives of every part of the school this will go a long way to make self government a reality The main function of school as a training ground for character is to give greater scope than the sheltered home life with a wider range of duties and opportunities bringing in the needs and problems of life in a larger community That education will be most complete which includes most sides of the child's life and gives the widest training This is the great advantage that the boarding school has over the day school that it more fully controls so many kinds of training of body and character as well as of mind And this too is why a truly rational system of education will be co educational To confine school life and training to each sex is to deprive it of a large part of its value both at the time and still more for its influence in mutual knowledge and respect in habits of comradeship and in a much wider and healthier outlook on the whole of life after school age Whatever the kind of school its whole life should be planned *not* to turn out the boy or girl with the least expenditure of trouble to a stereotyped pattern, but to allow of freedom of growth to develop individuality to train self control We are too apt to think of our work as "moulding" the child's character "implanting" faculties and so on, metaphors which imply that we shape passive material On the contrary, our main work is to give him the opportunity and the desire to educate himself with no more interference from us than is necessary to check undesirable tendencies and interference with others School is above all, a place of opportunities, a place in which to awaken motives and establish habits that shall be carried on from these preparatory years into the wider education of life and that education is most rational which provides the environment most helpful to this purpose J H B

RATKE, WOLFGANG (1571–1635) —He was born in Holstein and after a university education settled in Amsterdam as a teacher He afterwards visited Basel and Strassburg and in 1611 took up his residence in Frankfort In 1612 he presented to the Imperial Diet a " Memorial in which he professed himself ready to show how young and old might learn languages in a shorter time than was then usual He also proposed to set up a school for teaching all arts and faculties in high German as well as in other languages and lastly he invited the Diet to consider plans whereby there might be conveniently introduced and peacefully established throughout the whole Empire a uniform speech a uniform government and a uniform religion In a subsequent " Elucidation " of his plans he insisted on the importance of the vernacular language as a means of instruction and proposed to use the Bible as a nucleus for language study assisted by other suitable text books The memorial was well received and freely discussed German professors reported favourably on Ratke s methods of teaching calling attention to weaknesses in existing methods and to the merits of Ratke s plan of insisting on repetition and frequent questioning In 1614 the city of Augsburg invited Ratke to reform their school but his attempts were not successful He was however established at Kothen by the Princes of Onhalt and Weimar where he was visited by teachers whom he trained in his methods in a school of boys and girls which the princes got together for him His chief maxims were (1) Everything after the order and course of nature (2) one thing at a time (3) one thing again and again repeated (4) nothing shall be learnt by heart (5) uniformity in all things (6) knowledge of the thing itself must be given before that which refers to the thing (7) everything by experiment and analysis

RAUMER, FRIEDRICH LUDVIG (1781–1873) — A German historian was Professor of History at Breslau from 1811 to 1819 and at Berlin from 1819 to 1830 He made the first scientific attempts to popularize history in Germany His best book *History of Hohenstaufen* was published in 1823–1826 and was followed by others between 1832 and 1839 He travelled extensively after 1830 and wrote accounts of his observations in books on England Italy the United States etc His brother Karl Georg von Raumer (1783–1865) became Professor of Mineralogy at Breslau Halle and Erlangen in succession and wrote a *History of Pedagogy* (1843–1851) (including special sections on the Education of Girls afterwards published separately) and a number of works on Geology and Geography

REACTION (PSYCHOLOGY) AND REACTION EXPERIMENTS —Strictly speaking any response to a stimulus is a reaction the contraction of the iris which follows the incidence of light on the retina, the withdrawal of the hand which comes into contact with a hot poker the movements made by a hungry animal in sight of food all these are reactions

In psychology however the term is generally limited to a pre-determined movement made in response to a pre determined stimulus In a reaction-experiment the subject (or reagent *i e* the person whose movements are under examination) is instructed to react in a particular manner on perceiving a certain object (a sound printed word, etc) In its simplest form he presses a Morse-key By means of suitable apparatus and a chronoscope (a clock which reads to a thousandth of a second, and is automatically started and stopped by making and breaking an electric current) the interval that elapses between the exposure of the stimulus and the subject s reaction can be measured with great accuracy This interval is called the *reaction time* This complicated apparatus is used only in experiments where the reaction-times are short much useful work especially in the higher mental processes where reaction-times are long can be done with a stop watch and some simple device for exposing the stimulus instantaneously

Reactions may be roughly classified as simple and composite A simple reaction is a pre-arranged movement made directly on perceiving a pre-arranged stimulus for example the release of a reaction key on hearing a certain sound After a little practice such a reaction approximates in its automaticity to a reflex action

Reaction-times The lengths of simple reaction-times vary with the nature of the stimulus the nature of the reaction the direction of attention and many other conditions The average simple reaction time of an experienced subject to sound stimuli lies between 125σ and 220σ (1σ = one thousandth of a second) to light stimuli between 175σ and 270σ and to touch stimuli between 110σ and 210σ These differences are undoubtedly due to differences in the times required for the production of physiological changes in the peripheral sense organs and their central connections Some movements are made more easily and more quickly than others , *e g* a reaction key can be more quickly released than pressed The direction of attention has a pronounced effect on reaction times When it is directed on the stimulus the reaction-time is longer though less variable than when it is directed on the movement Reactions of the first kind have been called *sensory* those of the latter *muscular*

The average sensory reaction-times of a practised subject to sound light and touch are 220σ 270σ and 210σ respectively whereas the corresponding muscular reaction times are 125σ 175σ and 110σ These differences are to be explained by the effect of the reagent's attitude on the preparation of the motor apparatus Variations in the power of maintaining a favourable attitude probably explain other features of reaction-times *e g* that they are shorter when the stimuli are presented regularly and preceded by a warning signal that they are shortened by practice and lengthened by fatigue that children and the aged give long reaction times and that individuals and races show characteristic differences in rapidity of motor response Intense stimuli give shorter reaction times than faint stimuli

Composite Reactions Composite reactions may be recognitive discriminative choice associative etc They are preceded by more complex mental processes than simple reactions In recognitive reactions the subject is instructed to react as soon as he recognizes the stimulus in choice reactions he reacts only when a certain stimulus appears or in one way to one stimulus and in another to another, in associative reactions he calls out the name of some object associated with the object the name of which is shown The reaction-times here are much longer than in the case of simple reactions

Their Significance. In the early days of the reaction-experiment attempts were made to deduce the time required for the performance of typical mental operations *e g* recognition-time was supposed to be given by subtracting simple reaction-time from recognition reaction-time and choice-time by subtracting discriminative reaction-time from choice reaction-time This procedure however is indefensible for mental processes are not added together in time, mental complexity is a result of differentiation rather than of addition Further simple recognitive discriminative and choice reactions are not so different as their names imply even in simple reactions there is a certain amount of recognition and in choice reactions there is no real choice for decision is made before the stimulus is exposed It is equally unsatisfactory to attempt to determine the duration of cerebral processes by subtracting from simple reaction-time the time required for the production of changes in the sense organs and in the afferent and efferent nerves since our knowledge of the duration of these processes is not very reliable

Modern Reaction Experiments Reaction experiments have recently gained a new lease of life on account of a change in the use to which they have been put In the experimental study of the thought-processes the method of the reaction-experiment has been used for the purpose of delimiting the segment of consciousness under investigation A task has been set (*e g* to find the name of the class to which the stimulus word belongs) the interval elapsing between the exposure of the stimulus and the reaction has been measured and full accounts have been given of the contents of consciousness during this interval Reaction-times here have been used merely as a control of the subject s introspection S D

READER —A reader is a university teacher of the rank next below professor (*q v*) His functions are practically the same but his subject is of less importance or has appealed less to benefactors As with professors readers hold their office in certain cases for a specified number of years There are more readerships with a limited tenure than there are professorships under the same conditions The stipend of a reader is on an average rather less than half that of a professor A C C

READING AND WRITING TO YOUNG CHILDREN, THE TEACHING OF —In his *Principles and Methods of Teaching Reading* Dr J S Taylor reminds us that in order to ' read " intelligently a simple name the child has to take into account and associate the following elements (*a*) The concept of which the word is the label (*b*) the auditive image of the word (*c*) the muscular image of the word as *spoken* (*d*) the visual image of the word When he can associate all these with the muscular memory of the word as it is written he is able both to read and write it intelligently To this end the part of the teacher must be in the first place, to see that he is provided with plenty of experiences from which he can form clear concepts in the second place, to give him plenty of opportunities for hearing and using good spoken language and, in the third place to encourage in him when the need is felt a desire to read and write, and to give him the necessary guidance in doing so

Psychologists tell us that a child under 10 is mainly " ear-minded," and that the " habit-forming epoch " lies between the ages of 5 and 10 Thus the early years are essentially those in which we should seek to store the minds of children with beautiful images of spoken language, by giving them opportunity to listen to poetry and story, in which we should help them to form habits of clear and correct utterance, and train them to clarify and strengthen ideas by expressing them in action and speech—the means most natural at this stage

We know that before the age of 8 the sense organs and nervous system are not adapted to the fine adjustments involved in the use of books Since this is so there is no place for book work in the infant school Yet good preparatory work can be done there with much advantage—in helping the children to form a rich store of concepts, and training them in the understanding and use of oral language All this can be done in the time now alas generally devoted to so-called ' Reading ' which consists merely in translating sight symbols into sounds with little reference to meaning

Idea before Word, and Word before Symbol Since reading and writing are but tools for getting and expressing thoughts and ideas it seems best for children to make acquaintance with them by using them from the start for their proper purpose rather than by performing with them any kind of artificial gymnastics Young children express themselves most naturally by gesture and voice As development proceeds, they use crude picture making as a more objective form of self-expression A child in course of time begins to realize that his pictures are liable to misinterpretation and by the time he is 6 or 7, he is usually able to appreciate the advantage which the written word has over the picture When this stage of development is reached the *indirect* symbol should be introduced, that it may be substituted when necessary for the *direct* symbol In studying the evolution of the alphabet it is interesting to note that the use of visual language began with picture-writing that conventional signs for words developed gradually from pictures as the need was felt for fuller and speedier and less ambiguous means of visual communication and that only at a later stage of development and in response to a felt need, was the plan adopted of using a set of symbols each representing some definite sound of the human voice Such symbols were combined in various ways to keep pace with the increasing vocabulary of spoken words

Thus it would seem more logical to introduce children at first to the visual symbol of the *word* rather than to begin by teaching them a phonic alphabet and experience tends to prove that this is also the more correct psychological course

In order to connect word and concept, children in some infant schools are provided with large printed labels which they are encouraged to pin each day upon the objects to which they belong such as the door wall chair or table They are given boxes of pictures and of labels, and learn to connect these They are taught to recognize, as necessity demands, their own names, and those of their friends, and learn to write these legibly upon their work and possessions They are shown in simple ways how to form the habit of using visual language for communication To this end, the teacher writes upon the blackboard directions which can be carried out as soon as they are interpreted

and the children are encouraged to communicate with the teacher or with one another by using their own blackboards or that of the class in the same way They learn also to read from the blackboard rhymes and stories which they already know, or partly know The reading of these forms the main part of the daily reading lesson which need not occupy more than twenty minutes each morning Children taught in this way do not need direct instruction in the names and sounds of letters but learn to know these gradually by an almost unconscious analysis and synthesis of words with some guidance from the teacher as it is needed The exact nature of this guidance will be determined by the need of the moment When a new word appears in the reading it may be necessary to tell the class what it is or they may be led to discover that it has in it some element which is already familiar Thus a class in reading *Hiawatha* came to the line which tells how the moon rose '*rippling rounding* from the water Here were two words they had often heard but had never seen before They could already recognize the words *ripple* and *round* and when the first of the new visual words was pronounced for them they had no difficulty in translating the second Since words are naturally more interesting than letters children will remember them with less difficulty and the teacher should not fail to make use of the laws of mental association by bringing the same word frequently before the class in various interesting connections and presenting these with clearness and force and at a time when the children are able to appreciate the opportunity for reading The teacher should be at liberty to omit or to lengthen a reading lesson when the attitude of the class makes this desirable

The Age to Begin It seems reasonable to delay the teaching of reading and writing in the case of the average school child until the beginning of the seventh year and to approach it in such a way that the child can appreciate its reasonableness and its value He will then learn rapidly and with interest and the usual waste of valuable time in the earlier years will be avoided He will not have had his attention held to the mere mechanism of reading to the exclusion of the thoughts that the words express and will not have formed the habit of substituting unintelligent repetition of mere sounds for the thought getting which true reading implies He will not have learned to associate reading with irksome restraint and fatigue and it will be possible to expect him at the proper time to concentrate his attention upon a book for the pleasure and profit he expects it to yield A E M

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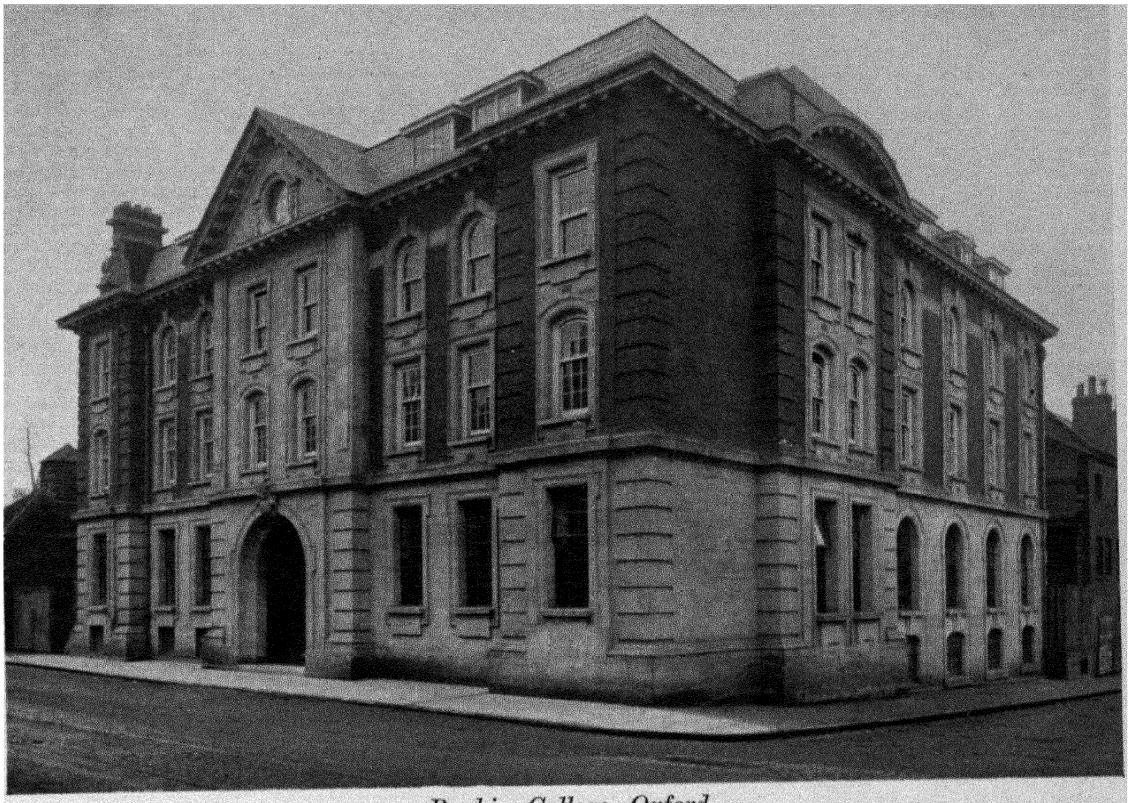
READING, SILENT —The practice of reading in silence is comparatively new in English elementary schools and has grown with the great increase in the provision of suitable literature for school use It is employed to aid the habit of private reading and is a useful aid to the extension of a child's stock of words phrases and ideas It helps to promote a habit of concentration and among elder scholars cultivates rapidity of reading and of obtaining information

READING TO OTHERS THAN YOUNG CHILDREN, THE TEACHING OF —Reading is to be taken as meaning intelligent interpretation of an author by the living voice the book being before the eyes The main object is to read aloud to others audibly and intelligently There are secondary objects (*e g* to give pleasure to oneself or others to interpret literature to examine the infinite capabilities of the voice) but all these are comprised under the object first stated to read aloud audibly and intelligently

Processes Involved The reader has to cope instantaneously with the following difficulties to keep the eye half a line before the voice to proceed forward in jerks until the end of the too-short line is reached and then to return without jerk to the beginning of the next line to watch the top half of the letters and words and neglect the lower half of the same, to recognize capitals and small letters uncial and cursive writing and various founts of type to pick up the phrase without reference or with slight reference to punctuation to form a judgment on the meaning of the phrase and to choose among several meanings to articulate enunciate intone and modulate so as to give the meaning he desires and finally to watch for and to defeat any errors or want of distinctness in the printed page As if this were not enough the reader is asked to pronounce according to a standard and to make his words audible to every one in the room in which he is reading It is absurd then to expect from the school a great deal in this matter What may be expected after very careful training is straightforward phrasing slow and clear speaking and an interpretation well within the student's mental grasp The reading lesson should be kept apart from the speaking lesson the latter being concerned mainly with phonetics and imitation and no pattern reading should ever be allowed unless at the conclusion of the work studied The reader should be encouraged to think that within his powers of intelligence he can read just as well as his teacher—as indeed he can With good readers who have imbibed the art from home influences or are predisposed to excellence in certain sections of it the teacher in the ordinary class need not trouble

A Typical Lesson The reading lesson which should take up a part of every school day may be divided into three parts it should never be taken except by a teacher who is a good reader and the number in a reading class should not exceed twelve at most every member of the class should read every day and in every part of each lesson

The first part of the lesson should aim at covering a good deal of ground the second part should aim at the grasp of the meaning of shorter passages and the third should aim at the interpretation of the phrase by the voice The importance of covering ground is seen in this—that it enables the reader to become unconsciously expert in the mechanical processes referred to above The reader may begin with silent reading and go on to reading aloud rapidity not expression is his aim If he makes errors he should not be corrected at the end of a paragraph he may read a passage again his sole object is to get to the end of his sentence or paragraph rapidly No amount of criticism of this part of the lesson as parrot-work need be considered it is exactly parrot work that is desired Twenty pages read rapidly by a class all following the reader with their own books will do more to



Ruskin College, Oxford



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Ruskin College, Oxford—Lecture Room in Memorial Hall

advance good reading at a later period than any amount of painstaking slow dreary work

When the rapid work is over a small portion of it may be re-read with a view to making the meaning quite clear to the class In this section of the lesson the class plays the part of questioner and the teacher listens and explains in answer to the demands of the several readers It is only in schools where this 'inverse Socratic method is followed (I borrow Mrs Sophie Bryant's admirable phrase) that the real difficulties of children can be discovered When they are allowed to make inquiries as to the pronunciation of a word the exact meaning of a phrase the drift of an author the visualization of an epithet then the reading of a paragraph takes on a different hue This is the second part of the lesson and in the re reading no rapidity is permitted One reader alone should possess an open book the rest of the class become critics of the paragraph the phrasing the intonation the modulation Teachers will find this section by far the hardest part of their work for it involves a good deal of self repression on their part and teachers as a rule imagine that they go to school to teach instead of going to school to enable others to learn To this part of the lesson belong also the tests of audibility and pronunciation which carry on the work done in the speaking lessons

The third section of the lesson takes into view a still smaller part of the book indeed it may deal with a single sentence The object is the closer interpretation of the author and the method recommended is to translate from the child's own intonations and modulations into those required for the passage Here the sentence the phrase will bear any amount of dissection As soon as children learn to interpret the author from their own experiences so soon will they begin to read The same method may be recommended for adults who are anxious to proceed with the higher study of reading

It may be objected that this method places rapid reading at the beginning and not at the end but this criticism shows an inability to grasp the meaning of the use of rapidity We do not want people to become rapid readers except in silent reading the whole aim of these lessons is to avoid rapidity and to ensure slow intelligent work A B

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PALIFSKE E *Die Kunst des Vortrags*

Dent's *Literary Readers* work out the methods advocated in this article

READING, THE DALE METHOD OF TEACHING—In the sympathetic study of children we cannot fail to be impressed with their concentrated interest in their self chosen occupations It is of great moment that the teacher should not check this earnestness of purpose with its consequent vitality of thought

We shall find that the surest means of allowing the children to develop their powers naturally and with the greatest advantage will be to lead them to be their own educators

In response to the child's desire for truth and in the interests of clear thinking we shall recognize the need of making our work as scientific as possible

In the early stages of the teaching of reading we therefore give special attention to the cultivation of the spoken language, and we shall regard this as an important part of the work throughout the school career

The children are encouraged to talk about flowers animals and other interesting things around them and their songs stories and poems all help to widen their knowledge of the mother tongue They next discover the sounds that they use in talking and, by dwelling upon the initial final and medial sounds of short words they can hear the particular sound under consideration They now pass on to the comparison of their speech sounds and by the simple experiment of placing the hands over the ears during the utterance of the sound they can hear whether it is a voiceless or voiced sound (The children call them 'sister' or 'brother' sounds)

In the next stage they notice the way in which the sounds are produced They can see or feel the various movements of the lips or tongue for the production of the sound

In each stage of this work they try to reproduce the various things talked about by drawing on their blackboards modelling painting and dramatic action Thus far we have been dealing with the living language only

From the Spoken to the Written Word We now pass on to the learning of speech signs or letters using the sound only and not the name For the teaching of each sign a story is told introducing the particular word which is regarded as the key word for that sign The children discover the sound decide whether it is a 'sister' or 'brother' and notice the way in which it is produced They describe the sign when it is shown to them and print it in its fitting colour on their blackboards afterwards illustrating the story that introduced the key word (Colour is used for the differentiation of sound the voiceless consonantal sounds being blue the voiced black the vowels red and the silent consonants yellow) The sign is then placed in the tabulating frame (specially designed for the classification of the speech sounds) and is afterwards identified in the *Steps to Reading* The unconscious knowledge of the Science of Language that the children gain is invaluable in later linguistic work

When a few signs have been learnt the children use them for building in the frame words introduced in stories told in connection with the pictures in the steps

The work of the *Steps to Reading* comprises the learning of the simple consonantal sounds and the short vowel sounds Throughout the children proceed from speech to sign for in their building they translate the spoken word into its printed form

Later books give practice in proceeding from sign to speech for the children are able by means of sounding to turn the printed form into the spoken word They overcome the difficulty of syllables by taking a step forward for each sounded vowel Writing is added to printing when the children finish *Steps to Reading* and they take an active part in describing the changes necessary in turning the printed into the written word In the books that follow *Steps* the double consonantal sounds are introduced In later books the children learn the long vowel sounds and the ways in which they are represented special care is taken with regard to the order in which these are taught, as careful spelling is kept in view throughout

Nature lessons geographical talks modelling,

painting and other lessons are given in connection with the reading so that the children may have an intelligent grasp of the words they build or meet

The human interest is sustained by their reading about the doings of a large family with many pet animals

If in the learning to read the child can preserve his vitality of thought the printed book will always be to him a living book N DALE

READING, THE HYGIENE OF —The fatigue induced by reading is due mainly to bending the head forward which produces congestion of the eyes to eye movements and to the general physical strain which is invariably associated with sedentary work Very young children are also fatigued by the muscular co ordinations required in reading aloud In reading a page of print the eyes move rapidly from left to right in a series of jerks The delicacy of the adjustments of the intrinsic and extrinsic ocular muscles required in making these movements and the frequency and regularity of their recurrence are probably the direct cause of much of the fatigue experienced in reading The work of these muscles is very great if the printing be small and badly spaced and if the pages be not flat and at right angles to the line of sight

It is generally agreed that the prevalence of myopia among school children is largely due to the amount of near work they have to do The eyes of a child on account of their incomplete development, are very liable to injury from over exertion Being unfamiliar with the forms of words he requires a larger retinal image than does an adult Hence if the print be small he holds the book so close to his eyes that injury is apt to result

Reading fatigue among children can be considerably reduced by careful selection of books It is desirable that school books be printed only in black ink on white unglazed paper with a hard wearing surface and bound so that they open flat The letters should be well defined and the words easily readable as wholes The size of the type on which depends mainly the legibility of the letters may vary with the age of the reader (See TYPE [PRINTED] OF BOOKS) S D

READING, THE PSYCHOLOGY OF —In reading the eyes move rapidly along a line from left to right in jerks and swing back to the beginning of the next line The extent and duration of these movements have been determined experimentally in various ways (*e g* by fixing a small plaster of Paris cup to the cornea the movements of which are recorded on a rotating drum by means of a small pointer attached to the cup) The number of pauses per line depends on several circumstances the nature of the reading matter the reader s familiarity with it the length of the lines and the size of the type The duration of the pauses varies greatly but is generally about four times as long as that of the movements A reader tends to make the same number of pauses per line in reading a particular kind of matter a sort of temporary movement-habit is formed which is very serviceable in economizing energy When such a habit has been formed it is easier to read lines of the same length than those which vary A clear retinal image of the printed page is given only during the pauses and only objects in a small area in the centre of the field of vision are seen clearly

The amount perceived during a reading pause cannot be determined exactly by introspection of the ordinary reading process for we are not subjectively conscious of these pauses nor can it be determined adequately by looking fixedly at a point and finding how much is read on each side of it Some light has however been thrown on this question by experiments in which letters words and sentences arranged in all sorts of ways are shown for a very short interval With an exposure of about a tenth of a second from four to six letters placed irregularly and so as not to form a word can be recognized if the number be greater than this mistakes are made But if letters are formed into familiar words many more can be apprehended at a glance in fact it is as easy to perceive four or five short words as the same number of disconnected letters The number is further increased when the words are formed into familiar sentences

Recognition and Rapidity Thus we do not read letter by letter but identify whole words and phrases and even sentences by their general form In doing so we are assisted by certain letters called dominating or determining letters (*e g h b t g*) which by breaking up words into characteristic forms help us to identify them By obliterating the second and then the first half of each word in a piece of prose it has been shown that the first half of a word is of more importance for recognition Similarly it has been demonstrated that the upper half is more important than the lower The ability to recognize words depends also on the reader s familiarity with them and in ordinary reading on the syntactical form of the sentences his awareness of what has just gone and his premonition of what is to come

The rapidity with which the recognition of individual words takes place determines the total rate of reading and probably also the quickness of comprehension of meaning There is no truth in the popular notion that slowness in reading is conducive to clearness of understanding As a matter of fact a fast reader as a rule understands more quickly and remembers better what he reads than does a slow one and it is generally true that a person understands best when he reads at his maximum rate

The rate of reading is also influenced by inner speech Silent reading is a form of suppressed speech but the suppression is seldom complete A reader tends to make the necessary vocal movements while suppressing the sounds Sometimes they show themselves in lip movements but even after these have been suppressed there still remains more or less twittering of the muscles of the larynx and tongue Pure visual reading is possible and can be cultivated but it is extremely rare Inner speech goes on during both inspiration and expiration whereas reading aloud is possible only during expiration this explains the greater rapidity of silent reading

Individual differences in the rate of silent reading depend in some measure on how far it is accompanied by inner speech The nearer this approaches reading aloud the slower is the reading It is subject to training In most schools children are taught to read aloud but unfortunately silent reading is neglected Bad habits of over articulation are allowed to form and time and energy are lost Most people could with a little practice double their rate of reading without in the least impairing their power of understanding what they read S D

READING, UNIVERSITY COLLEGE.—The college occupies the ancient hospice of St John and is affiliated to Oxford University It dates from 1860 when art classes were established in connection with a science and art department In 1892 the college was established as the University Extension College in conjunction with the Schools of Science and Art Reading the latter part of the title being dropped a year later In 1902 the institution became a University College entitled to grants from the Treasury new buildings being provided in 1906

The College provides study in letters science fine arts music commerce and technical subjects and special facilities for study and research in agriculture and horticulture The courses in letters and science are arranged to suit requirements for the London external degrees Diplomas are granted in all departments and there is an elementary training course recognized by the Board of Education

There are two residences Wantage Hall and St Patrick s Hall for men students The total cost of maintenance and tuition for a degree or diploma course varies from £65 per annum according to the course

REALGYMNASIUM —The old gymnasium was a classical school of a clerical character The Order of Studies issued in 1859 led to the foundation of a new institution of a semi classical nature known as the *Realgymnasium* In 1890 the Emperor set himself to reform the gymnasium and in the new Order of Studies (1892) Latin was curtailed and greater stress was laid on German and the interests of physical efficiency The *Realgymnasium* obtained in 1900 the same privileges as the gymnasium including a successful student s right of admission to the universities (See also GERMANY THE EDUCATIONAL SYSTEM OF)

REALIFN COMMITTEE —(See ARCHAEOLOGICAL AIDS IN THE TEACHING OF ANCIENT LITERATURE AND HISTORY)

REALSCHULE —A higher grade school in Germany State supported and providing education in subjects adapted to the needs of art science trade and industries The first school of this kind was the Economical and Mathematical Realschule founded by J J Hecker of Halle University at Berlin in 1747 The Bavarian Government opened similar schools in 1808 and in Prussia State-aid began to be given in 1832 At first Latin was taught but the Prussian schools were re organized in 1859 and the *Realschule* was distinguished from the gymnasium or classical school Their aim was to give to their pupils that degree of intellectual capacity which is a necessary condition of a free and independent comprehension of their future work in life ' The universities gave the pupils of *Realschulen* the right to attend lectures and in 1870 the leaving examination of the *Realschule* was accepted as an admission to the faculty of philosophy and to the privileges of a full course in that faculty In 1882 the *Realschulen* were classified and Latin was excluded from the curriculum In the *Realschule* as now organized the course is one of seven years in the *Oberrealschule* it lasts nine years and in the *Hohere Bürgerschule* six years (See also GERMANY, THE EDUCATIONAL SYSTEM OF)

REASONING IN CHILDREN, THE DEVELOPMENT OF —Reasoning may be defined as the process whereby the mind passes from one or more judgments (called the premises) to a new judgment (called the conclusion) which the former are seen to imply The psychological nature of this implication is obscure The mind may be regarded as controlled throughout its procedure by what may be described according to the epistemological standpoint adopted either as *a priori* logical principles (' laws of thought ") or as empirical conventions and habits assumed to be conducive to true knowledge Except in its most primitive forms reasoning is impossible without symbols—such as words figures diagrams etc —which represent objects of thought and their relations and which enable attention to be focused upon highly abstract or highly complex aspects of experience The classical example of reasoning is usually cited in the following so called syllogistic form " All men are mortal I am a man therefore I am mortal " The instance though time honoured is misleading Reasoning as a psychological process seldom commences with a major premise Indeed major premises even where logically implied or assumed, are as a rule suppressed Reasoning is instigated by a problem commonly formulated as a question The conclusion forms the answer to this question And the whole procese so far from being purely cognitive (or intellectual) has a strongly conative (or purposive) element running throughout A specific interest starts and sustains every train of reasoning Further in the initial discovery of the problem there is a marked emotional element mildly unpleasant or unsatisfying and the emotional element is equally marked in the discovery of the solution being then somewhat of an aesthetic character mildly pleasant and satisfying The whole process may perhaps be regarded as an acquired reaction to a mental conflict largely developed from and motivated by, an inherited instinct—such as the hunting instinct with its correlative emotions of curiosity and wonder, operating in a highly modified and sublimated form

The Nature of the Reasoning Process In the reasoning of the child these purposive and emotional aspects due to instinct and interest, are vividly accentuated The realization of this fact has recently begun to tinge with a practical and concrete colour the teaching of abstract subjects such as algebra and trigonometry Before expecting a child to reason we now require that he should see the difficulty which demands the exercise of reason and express that difficulty clearly in the form of a question He should watch that his final conclusion really answers the question with which he set out and so solves the difficulty which first aroused his interest

Reasoning then like every mental process is a reaction to a stimulus a response to a situation It proceeds by association and may be regarded as characterized by associations of a particular type peculiar to man as distinct from other animals In the first place the successive thoughts or images are not recalled haphazard through free association (as in reverie or day dreaming), their reproduction is controlled by the "determining tendency" (*Aufgabe* or "task ') which initiates the whole process Further in the most explicit forms of reasoning we seem immediately to apprehend, not only the ideas or objects associated, but the relations between them—the manner in which they

are associated In judging " A is to the right of B (or " is similar to B ') I can in succession attend to and perceive not only A and B but also the relations between them similarly in judging " B is to the right of C ' From two such propositions I proceed to infer—" A is therefore to the right of C ' In so doing I apprehend the whole relevant system of space relations of which A – B and B – C form part and ' see (as we say) that the first two relations falling within this system necessitate the third and last It is the inability to perceive relations and the consequent confinement to chance associations due to contiguity in time, or to partial identity between percepts that renders animals incapable of reasoning In the child the growth of reasoning consists essentially in the development of the former capacity out of the latter

The more primitive forms of reasoning are based upon association by similarity This does not mean in the simplest cases that the immature reasoner is aware of the similarity or attends to similarity as above suggested but simply that the second object perceived in virtue of its partial identity with or resemblance to the first excites as a whole the same neural system as was previously excited by the first object The inference is thus implicit not conscious A child of 2 or 3 who has been ill treated by a person characterized by some striking peculiarity (for example short stature) will turn away in dislike from all other similar persons Later at the age of 4 he may like the child in the Worcester collection (*see* below) explain that he expected C D would be cross because she was short like his cross nurse A B The child here argues not from the particular to the general nor from the general to the particular, but from the particular to the particular Such ' reasoning by analogy is perhaps the commonest feature of the child s first intellectual efforts as it is of the intellectual efforts of the savage This is one of the results that emerge most clearly from the early collections of children s reasonings The process leads to unexpected deductions such as that drawn by the little boy who said that he was 6 when he stood on his feet but would be 9 if he stood on his head because 6 upside down makes 9 or that implied by Sir John Lubbock s little girl who said to her brother " If you eat so much goose you will get silly —an inference which might be closely paralleled by many a savage custom Many of these analogies consist in little more than ignorant play upon words Stanley Hall s inquiries found children who believed butter came from butterflies grass from grasshoppers and kittens from pussy willows It was this analogical character of children s reasoning that suggested the test now known as the " Analogies test, where a relation discerned between two given terms (*e g* black–white) has to be applied to a third term (*e g* bad) to deduce a fourth term which is not given

The earliest studies of reasoning processes in children consisted in collecting observations either from large numbers of children of different ages (for example the 500 records gathered in the Worcester State Normal School Massachusetts) or from one or two children closely observed during their early development (for example Professor Sully s *Studies of Childhood*) Later investigators beginning in this country with an inquiry of Professor Holman and the Child Study Society employed tests involving problems either in arithmetic or in everyday matters

Experimental Investigations The interest in tests of general intelligence gave a new impetus to reasoning-tests An investigation attempted by the writer for example, showed that tests of reasoning —such as finding opposites working out analogies (' rule of three in words) criticizing absurdities inserting missing words in a mutilated argument (*e g* the opening paragraph of Bacon s *Essay on Revenge*) drawing conclusions from premises stated in syllogistic form—gave a far higher correlation with general ability than the older tests of simple sense perception or simple motor activities

Experimental investigations however carried out by means of tests such as those specified are still urgently needed The following are perhaps the more important of the conclusions so far reached

All investigators are agreed that the reasoning efficiency of children develops progressively with increase of *age* There have been however scarcely any inquiries carried out with a large number of problems upon a large number of children representing a large range of ages in order to determine in what precisely this development consists The samples appended to this article illustrate the type of problem an average child may be expected to solve at each age It will be noticed that the difference is quantitative rather than qualitative The development of reason does not consist in the successive comprehension of one type of inference after another The appreciation of a given logical form does not emerge at one definite age or stage Rather the development consists in the power to co ordinate an ever-increasing multiplicity of data in a single systematic whole A problem appropriate to age 7 may be made appropriate to age 14 not so much by altering its form as by increasing its complexity An analysis of children s compositions and essays yields a similar result They pass from simple disconnected sentences to sentences joined by " and later temporal conjunctions are introduced (' when ' ' while) then casual (" because ") later still conditional (" if " although) Interest passes from motive (what for ?) to cause (' why ?)—at first anthropomorphically conceived (' what makes it do so-and so ?)—then to mechanism (how ? ') and finally—if at all—to predisposing and exciting factors duly distinguished This however is not because the child is incapable of appreciating causes or conditions at an earlier stage but rather because he has difficulty in attending to such a complexity of relations as causal and (even more) conditional conjunctions imply Almost all the mental mechanisms essential for reasoning appear to be present before the child leaves the infants school (*i e* at the mental age of 6 or 7 if not earlier) Development consists chiefly in an increasing interest extension refinement and control in their employment

Many observers state that the development of reasoning is spasmodic rather than uniform Hancock for example found errors in arithmetical reasoning decrease most rapidly at 9 13 and 15 Between these stages he often detected an actual loss of power The approach of puberty is marked by an accelerated development of spontaneous intellectual activity manifested in the increased interest in puzzles—mechanical geometrical and linguistic—and in other forms of intellectual play About the age of 12 too—somewhat earlier in girls somewhat later in boys—the critical spirit enlarges The curve of doubt disbelief and argumentation

begins a very rapid rise At first this spirit insists only upon a single test of validity even as far as the seventeenth year, a single coincidence is readily accepted as a proof among well-educated adolescents Many never pass beyond this stage Mathematical tests in secondary schools suggest that an increase in logical activity at the stage of mid puberty is accompanied by a decrease in mechanical accuracy Older writers connected this enlargement with the accelerated development of the " association fibres particularly in the frontal and parietal areas of the brain cortex Wernicke for example noted a marked increase in the medullation of the systems of " nerve-fibres " at the age of 12 Very little, however is known of the physiological basis of intellectual activities The true cause of the development is probably to be sought not in the sudden ripening of a new faculty but in the heightened interest in and extended use of a pre existing capacity, suppressed hitherto by the authority of school and home and now called into play by increased freedom and independence

Individual Differences All investigators have been struck by the wide range of individual differences In a random sample of a thousand London elementary school children aged 10 the brightest proves able to solve problems which can only be answered by the average child of 14 the dullest is unable to answer those which can ordinarily be solved at the age of 6 or 7 Since the tests employed are constructed so as to depend as little as possible upon any special fund of learning or form of skill acquired at school or at home the differences may be regarded as for the most part innate Education still tends very largely to ignore these peculiar ities It leaves them untrained unexploited unexplored Dull children are confronted with problems and methods of reasoning that are well above their intellectual level often above any level they can ever achieve Bright children do not receive material sufficiently hard complex varied, or progressive for them to advance at the speed of which they are capable Several writers attribute the temporary decline of reasoning powers to premature forcing of immature individuals and to insufficient exploration and utilization of the powers of the more mature Of all practical corollaries drawn by different investigators this criticism is perhaps the most important and the most constant

Sex Differences in reasoning are small This conclusion is reached by nearly all investigators who have applied tests of reasoning to children of both sexes " There is no general superiority on the part of the male sex as is often asserted Rather specific instances of masculine superiority are counterbalanced by specific instances of feminine superiority " (Cohn and Dieffenbacher) " On the whole the resemblances between the sexes are far greater than the differences " (Bonser) Practically all inquiries have disclosed a superiority on the part of the boys in mathematical work especially in mathematical reasoning In scholarship examinations where mathematical papers are included, it is found that female scholarship winners gain fewer marks in arithmetic than male but more in literary papers A recent analysis of replies sent in by members of the inspectorate in Scotland where mixed schools are more general indicates that the difference depends largely upon extrinsic factors—differences in interest in teaching efficiency in standard of work required, in the time devoted to the subject, and in the curriculum generally but that it is nevertheless, to a small though discernible extent, due to inborn peculiarities, which reveal themselves increasingly with increase of age According to several of the correspondents, the arithmetical inferiority of the girls is more marked in problem work, in adopting new methods of analysis in intellectual initiative and enterprise in reasoning by progressive logical steps, but in other respects (in accuracy, memory-work, mechanical routine) they are equal to the boys if not superior An extensive survey with psychological tests shows that these peculiarities very largely characterize the reasoning of the two sexes in non scholastic work generally The differences fluctuate somewhat with age Before the age of 7 no differences in reasoning power are discernible except such as may be directly due to the girls' superiority in the appreciation and use of words From 7 to 11 the boys are slightly superior towards the age of 13 girls are temporarily superior As adolescence is completed the male sex again becomes superior The differences, however are very largely due to differences in the traditions and experience of the two sexes Further, in different aspects or elements of reasoning the sex-divergences are differently manifested Where the solution of a problem depends upon grasping the meaning of words or expressing meaning in words girls are favourably handicapped, though their solutions are apt to be wordy and diffuse Where the problem is presented in mechanical form (*e g* in reasoning out the working of a piece of apparatus) the boys surpass the girls Girls excel in the imaginary construction of situations or concrete hypotheses in jumping to presumptive conclusions in patient and persevering analysis, in attention to minutiae and detail Boys tend to be more methodical in thought and more critical in their inferences (An examination of the differences in reasoning power between the two sexes as compared with the differences manifested in other mental functions will be found in the *Journal of Experimental Psychology* Vol I Nos 4 and 5 especially pp 375–378)

The Influence of Education upon reasoning is difficult to determine One of the earliest investigators concluded from his tests that " education improves this faculty, grammatical and mathematical studies both telling their tale ' The doctrine of the limitation in the transference of improvement due to practice—a doctrine now generally received—stands in strong antagonism to such a view Reason is not a simple faculty to be trained by repeated exercise in the special gymnasium of mathematics or grammar It is a highly complex function of the mind working as a whole quite as much as through special capacities Very largely it depends for valid results upon a definite technique—a habit of methodically forming and testing conclusions and avoiding common fallacies—a technique or habit which admits of formulation just so much as the principles of literary composition and which is doubtless teachable to much the same extent and by much the same means The invalid reasoning of the young child is due not as much to the immaturity of a slowly developing faculty as to the limitations in its knowledge in its experience in its environment in its familiarity with language as an instrument of conceptual analysis and synthesis, in its power to organize or integrate a multiplicity of

percepts and ideas into a complex systematic whole and finally in the practical needs which force mental constructions to conform to objective fact rather than to subjective fancy Present systems of instruction endeavour to teach reasoning through but one or two kinds of subject matter which are highly abstract and remote from the concrete daily experiences and interests of the child himself An inquisitive and independent child will learn more of reasoning from reading well written detective stories investigating machinery reproducing conjuring tricks arguing with another companion or debating in class—especially if the topics be widely varied—than from all the mathematical lessons of his whole school career

Graded Tests exemplify the type of material that may be used for testing reasoning and probably for training it and at the same time illustrate the average level to which the reasoning powers attain at the ages specified Each problem is taken from a set of five which in turn are selected as answered by approximately 50 per cent of ordinary town elementary school children at the several ages—

'7 *years* Kate is cleverer than Mary Mary is cleverer than Jane who is the cleverest—Kate Jane or Mary ?

8 *years* I don t like sea voyages and I don t like the seaside I must spend Easter either in France or among the Scottish Hills or on the South Coast Which shall it be ?

'9 *years* Three boys are sitting in a row Harry is to the left of Willie George is to the left of Harry Which boy is in the middle ?

10 *years* There are four roads here I have come from the South and want to go to Melton the road to the right leads somewhere else straight ahead it leads only to a farm In which direction is Melton—North South East or West ?

'11 *years* Where the climate is hot aloes and rubber will grow heather and grass will only grow where it is cold Heather and rubber require plenty of moisture grass and aloes will grow only in fairly dry regions Near the river Amazon it is very hot and damp Which of the above grows there ?

12 *years* Field mice devour the honey stored by the humble bees the honey is the chief food of the humble bees Near towns there are far more cats than in the open country cats kill all kinds of mice Where then do you think there are most humble bees near towns or in the open country ?

13 *years* Iron nails will not float in a pool A cup of pure gold dust weighs nearly twenty times as much as a cup of water of the same size If you drop a silver sixpence or a copper coin into a puddle it will sink to the bottom A cubic inch (about a tablespoon) of water weighs less than half an ounce A cubic inch of brass weighs over two ounces A leaden weight will drop to the bottom of the ocean Sum up all these observations in one short statement of the following form 'Most are .

" 14 *years* John said 'I heard my bedroom clock strike yesterday ten minutes before the first gun fired I did not count the strokes but I am sure it struck more than once and I think it struck an odd number John was out all the morning and his clock stopped at 5 to 5 the same afternoon When do you think the first gun fired ?

Additional tests will be found in the articles cited below from the *Journal of Experimental Pedagogy* and the *British Journal of Psychology*

C BURT

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RECAPITULATION —The fourth stage in the Herbartian series of the Five Formal Steps (*q v*) of the recitation After the new knowledge presented to the pupils has undergone the process of comparison and abstraction comes the recapitulation or stage of generalization preparatory to the application of the new knowledge

RECITATION, THE AMERICAN —The term *recitation* is used in the schools of the United States to designate the class exercise in which a teacher gives instruction as for example a Latin recitation or a recitation in arithmetic In a narrower sense the term is applied to the performance of a pupil Thus the pupil who answers all the questions put to him by the teacher is said to have made a good recitation

The term as its etymology indicates originated at a time when the class exercise and the performances of individual pupils consisted in repetitions of sections of the text-book which had been learned verbatim and were reproduced at the teacher s demand There is to-day a certain amount of purely memoriter work done in the schools but in general mere memorizing has come to be regarded as of relatively little educative value Perhaps no more marked change has taken place in American teaching

than the abandonment of the mere memoriter recitation of two generations ago

The schools of the United States have been from the first reading schools As shown by the Colonial statutes establishing common schools the chief purpose of the early settlers was to make the children independent in religious belief through direct access to the Scriptures In many of the early schools reading was the only subject taught The course of study has been indefinitely expanded since Colonial days but the form of the class exercise has persisted

The Present-day Recitation is based upon the pupils reading The pupils come prepared on a section of the text book assigned the day before It may be remarked in passing that the text book is the chief source of all the information which the children get in the schools of the United States In the lower schools there is no lengthy instruction by the teacher Teacher and pupils alike rely for the facts on a text The recitation in an American school is thus to be contrasted with the teaching often observed in European schools where the teacher supplies the information European schools began as catechism schools in which instruction was largely oral while American schools were from the first reading schools The practice has resulted in the preparation of many elaborate text books in all subjects The pupils prepare the assignment either at home out of school hours or in school during certain periods set aside for purposes of study

The simplest form of the recitation is one in which the teacher examines the pupils on the reading they have done Formerly as was indicated above the teacher was satisfied if the pupils could recall what they had read Indeed it is authentically reported that often the teacher would read the text aloud pausing now and then at some crucial word which the pupil was called upon to supply as evidence that he knew his lesson Such mere rote reciting has given place to a questioning which aims to go beyond the text and to arouse critical discussions and reasoning processes in the minds of the pupils The effort is made to induce the student to think by leading him to amplify the material found in the text He is urged to secure all available facts from many different sources through wide reading The recitation thus becomes a comparative study of many authors Furthermore pupils are trained in methods of evaluating statements on the subject studied Thought provoking questions are asked which lead to productive discussions and to independent reasoning on the part of the pupils The teacher becomes a party to a class inquiry in which information from all possible sources is sought and comprehended The recitation may supply a pupil with much new information and provoke much independent thinking

Developments of the Recitation This expanded form of the recitation undoubtedly owes its development to the inspiration which came to the United States from Pestalozzi Froebel and Herbart The form of instruction known as object teaching and the forms of instruction which were necessary as soon as constructive activities came into the schools made impossible the earlier purely formal memoriter recitation

Much of the recent educational literature of the United States has been devoted to the proper methods of conducting class exercises The term *methods* sometimes expanded into the phrase *methods of the recitation* has come to be used as a technical term in books for teachers Teachers are given sample lessons in these books on methods and are advised as to procedure in organizing special subjects Thus there are examples of recitations in arithmetic or geography There is also a rapidly-growing literature on methods addressed to teachers of high school subjects such as Latin algebra and science

Of late there has been a vigorous movement to emphasize as a legitimate part of class work the study of new material *Supervised study* is a phrase indicating that in many quarters a reaction against mere reciting has led to the adoption of a new attitude toward class work Supervised study turns the recitation into an exercise in which the pupils read the assigned passage with the teacher The teacher thus has an opportunity of controlling the pupils in their methods of attack on their intellectual problems Discontent with the more formal type of recitation was fostered by investigations in which stenographic reports of recitations showed that these exercises had degenerated into a series of rapid fire questions on the part of the teacher and a series of monosyllabic replies by pupils Such question and answer recitations while they are more productive than the purely memoriter type of recitation characteristic of an earlier day are not likely to stimulate genuine thought in the pupils

The term *recitation* can be further defined by setting it in opposition to the terms *laboratory exercise lecture* and *examination* The laboratory exercise is not a repetition of material read in preparation it is more like a period of supervised study The lecture is an exercise in which the teacher uses the time of the class in imparting information not accessible to the pupils The examination is a formal test intended to discover the effectiveness of the preceding recitations C H J

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RECOGNITION OF THE TEACHER — Recognition is used technically by the Board of Education as descriptive of their approval of particular (specified) qualifications which they consider necessary for particular duties In the Act of 1870 there is no definition but the term *teacher* includes assistant teacher pupil teacher sewing mistress and every person who forms part of the educational staff of a school

Recognition is explained more exactly in the Code from year to year—

Every school or department must have a head teacher who should be held responsible for the general control and supervision of the instruction and discipline and subject to exceptions duly set forth the head teacher must satisfy the following conditions (i) He must be a certificated teacher (ii) He must (unless he has obtained his parchment certificate under the provisions of the Code for 1906 or previous years) have completed such service as is required for the indorsement of a certificate (iii) He must (unless he is recognized by the Board as a certificated teacher as from August 1 1910 or some earlier date) have completed satisfactorily a course of training approved by the Board under the Regulations

for the Training of Teachers for Elementary Schools

It will be observed that the Board s requirements have been progressively stringent briefly the head teacher now must be (i) certificated (ii) experienced to the extent of the period required for indorsement (one year s service within twenty four consecutive months) and (iii) college trained

' A teacher other than the head teacher must (with the exceptions named in the following para graph) be a certificated teacher a person having the status of a certificated teacher or an uncer tificated teacher as defined in Schedule I or a student teacher

[Schedules I and II deal at length with conditions of recognition *Schedule I* of (A) certificated teachers, (B) teachers having the status of certificated teachers (C) uncertificated teachers (D) supplementary teachers *Schedule II* of (A) student teachers (B) pupil teachers]

' For the present supplementary teachers and pupil teachers may be recognized on the staff

In the words for the present we may again observe a progressive stringency there is a tendency to stiffen the conditions of recognition and to refuse it to persons without definite qualifications Thus a supplementary teacher used to be recognized freely enough Suitable women over eighteen years of age specially approved by the Inspector for their capacity in teaching There are later limita tions if recognized in an infants class in an urban school on 31st July 1914 (they) may for the pre sent continue to be employed in an infants class in the same school or department (and if) recog nized in a school or department for older children on 31st July 1909 (they) may continue to be employed in that school or department until 31st July 1919 War conditions and a general shortage of teachers have prevented prompt and resolute action on these limitations new appoint ments however are now recognized only in infants schools in rural areas

The qualifications demanded by the Board of Education put briefly and without regard to excep tions are the following (*a*) the certificated teacher must have the Board s certificate or others accepted as equivalent with or without col lege training (*b*) the teacher having the status of a certificated teacher is one who would have been duly certificated under the Board s regula tions except that he has failed only to satisfy the Board as to physical capacity under the Ele mentary School Teachers Superannuation Rules 1899 (*c*) the uncertificated teacher must be over 18 years of age produce a satisfactory medical certificate and have been successful in the Board s Preliminary Examination for the certificate or other examination accepted by the Board as equivalent (*d*) the supplementary teacher is merely over 18 years of age (*e*) the student teacher is one kind of apprentice to the teaching profession and (*f*) the ' pupil teacher is another the special feature of their service is that part of their time is spent in carrying on their academic studies—in a secondary school or otherwise and part in teaching practice

The Board will not recognize a clerk in Holy Orders or the regular minister of a congregation and for purposes of a minimum staff will recognize the head teacher as counting for 35 children in average attendance each assistant teacher (*a*) certificated or of certificated status for 60 and (*b*) uncertificated for 35 each student teacher and each supplementary teacher for 20 The pupil teacher does not ' count at all

Secondary Schools The Board do not define in detail their recognition of teachers in secondary schools ' The teaching staff must be sufficient in numbers and qualifications to provide adequate instruction in each subject of the approved curri culum Here we have the specialist not in educa tional science nor (as a rule) in teaching skill as measured by the credentials of a training college but in some branch or branches of school study such as Mathematics Classics Science or Modern Languages An honours degree of a British uni versity receives ready recognition from the Board and (in the case particularly of persons who would teach Upper Forms) is usually expected The Board s certificate is of little value in the secondary school though all important in the primary

Higher Education The same general condition of competence undefined is characteristic of the Board s recognition of teachers engaged in other forms of higher education

In PUPIL TEACHERS CENTRES for example the Teaching Staff must be sufficient in numbers and qualifications to provide for each pupil teacher adequate instruction in each subject of the curriculum

The teaching staff of TRAINING COLLEGES must be such as to provide adequately for each of the following branches of study (i) Education (ii) English Language and Literature (iii) History (iv) Geography (v) Mathematics (vi) Elementary Science

The Regulations for the Training of Teachers for Elementary Schools require university qualifica tions in the case of at least two thirds of the teaching staff and " a man proposed as Principal of a College who does not hold a degree in honours of a British University will not save in exceptional circumstances be recognized for this purpose by the Board

In SCHOOLS OF ART there is closer definition In order to be qualified for recognition as a Principal Teacher a teacher must hold the Board s Teaching Certificate for Teachers of Art or the Full Associateship of the Royal College of Art or an Art Master s Certificate (Group 1) or in excep tional circumstances such special qualifications as the Board may recognize ' A E L

RECORDE, ROBERT (1510–1558) — Studied mathematics at Oxford and afterwards medicine at Cambridge With the degree of M D he returned to Oxford but before long proceeded to London where he subsequently became Court physician Falling into debt he died in the King s Bench Prison

His four chief works are (1) *The Grounde of Artes* (*c* 1540) a text book of arithmetic (2) *The Castle of Knowledge* (1551) a treatise on astronomy and the sphere (3) *The Pathway to Knowledge* (1551) containing the first principles of geometry and (4) *The Whetstone of Witt or The Second Part of Arithmetic* (1557) dealing with algebra

Of these the first is the most important It deals with arithmetic as worked either with the pen or with counters and is like all his works in the form of a dialogue because says Recorde in that way a master meets the difficulties of his pupils The subject is claimed as worthy of study on account of its practical utility and also because of the antiquity of its use in the British Isles Recorde

gives a full and interesting account of Counter Arithmetic and in the other section on "Pen Arithmetic' was the first Englishman to adopt the signs for equality addition and subtraction now commonly employed "What two things" he pleaded can be more equal than two parallel lines His original work in algebra was concerned with general formulae and he outstripped his contemporaries in appreciation of the results to be obtained from them

Though preserving to the end a firm belief in Astrology Recorde was one of the first mathematicians in England to accept the Copernican Theory

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WATSON FOSTER *The Beginnings of the Teaching of Modern Subjects in England*

RECORDS AND REPORTS—Their name is legion They range from the simple record of work done in the smallest class of the smallest public elementary school in the kingdom to the complex Report of a Departmental or Consultative Committee or a Royal Commission

Imperial grants are conditioned by evidence of educational equipment and efficiency of procedure and result Hence must come inspection and report by the officers of the Board of Education And their *reports* are not very suitable *records* of what they find at the time of their visits but incorporate statements of fact and opinions which react upon the curriculum organization discipline instruction and management of the schools This condition of inspection and resultant efficiency is applicable to secondary and primary schools alike H M inspectors report in full detail to the Board and their summary observations with any necessary directions are communicated thereafter to governing bodies and managers

Records in Elementary Schools A natural outcome is a system of record and report within the school But in practice the RECORDS AND REPORTS in the public elementary school are of their own kind and are not found advisable or very practicable in the secondary system except with considerable modification Two points may be noted in explanation—

1 The uniform test in the elementary school for many years was the annual examination of the individual pupil in reading writing (including dictation o composition) and arithmetic and of the class in such class-subjects as grammar and geography The system led to much mischievous teaching and disciplinary method and failed adequately to help forward the best pupils The aim was a pass for as many as possible and the result a general mediocrity an average equality rather than the legitimate differentiation between pupils of different powers and industry under judicious instruction

2 The teacher in the primary school as a rule teaches every subject of instruction taken by the class the range of attainment is necessarily narrow and the certificated teacher in particular—and after a college training—is expected to be sufficiently ahead of the pupils to teach them effectively in all subjects scheduled which after all constitute the elements only of a reasonably liberal education

The outcome of these two positions is fairly obvious The system of individual and class examination for purposes of grant being now at an end something is thought necessary in the way of a public and therefore departmental and official security that grants are properly earned and buy their money's worth Daily records of work schemes and syllabuses of instruction and notes of lessons duly entered for regular and constant reference by the teacher and as evidence for an inspector are all now essential and are made the more easy and natural through the responsibility of the same class teacher for all the instruction of the class and the external examination of the Board s officer is displaced by the internal examination of the head teacher who term by term for three terms in the year as a rule, will record in the books of the class teacher the results of examination as well as consequent criticism and advice

Records in Secondary Schools In the secondary school inspection is a bigger thing Subjects of instruction are carried to a level that demands the specialist the same teacher or the same inspector is not properly competent alike in classics and mathematics and modern languages Several inspectors are required and several days of inspection and with much to be done it is thought sufficient that the Board s recurrent inspection shall take place at intervals of three years or even longer The reports are all the more fully detailed and precise But the internal record clearly cannot be that of the elementary school The Form teacher is an assistant master or mistress who may possibly not teach the Form at all and in any event will teach few subjects and perhaps only one The higher level of work requires special exercises in writing with careful corrections the exercise books of the pupils at once afford satisfactory evidence of the character and regularity of the instruction Term examinations are however important and universal the specialist teacher setting and marking exercises and the Form master or mistress summarizing work and conduct Under the authority of the head copies of these mark results and summary statements are sent home for the information of parents In these term examinations the head cannot judge authoritatively of separate subjects as in the elementary school but any defect here is perhaps more than met by (*a*) examination of Upper Form pupils by University Boards for purposes of matriculation or post matriculation or other certificates and (*b*) general school inspection by the same Boards

Briefly the *Report* of whatever kind and detail is the natural vehicle of information to any interest or authority whether individual or corporate Local education authorities have regular and routine as well as occasional and special reports from their officers Copies of most of these are sent to the Board of Education who are thus in good position of survey and of consequent correlation and co ordination of administration and themselves report annually to His Majesty Reports of Royal Commissions often pave the way for legislation

A E L

RECTOR—This was the name applied originally to a high dignitary in a university In the University of Paris the students were divided into bodies called 'nations with a rector at the head of each The rector was elected by the procurators of the "nation' and became one of the governing body In course of time the rector became the head of the faculty of arts one of the earliest faculties and was elected from the graduates in arts In the fourteenth century the rector became the head of the university The same procedure existed in

other early universities on the Continent and the doctors and professors were under the jurisdiction of the rector who also exercised considerable civil authority in the university town In modern German universities the *rector magnificus* is still the highest university official but he may be a local dignitary and is then represented in the university by a pro rector The heads of Lincoln and Exeter Colleges Oxford are the only rectors in English universities In Scotland the rector is under the chancellor the head of the university and is elected by the matriculated students some heads of higher class public schools also bear the title

In the Church of England rector is the name given to a clergyman who has charge of a parish in which the tithes are not impropriate

REFERENCE BOOKS IN SCHOOLS —In elementary schools at least there is urgent need to teach the use of reference books and generally speaking to re introduce and improve the methods of private study which were driven out by the extension of class instruction That there is danger in this advocacy may be admitted for like everything else that is good private study may be abused in particular it may present itself to a lazy teacher as a means of avoiding personal preparation of his lessons Still there is a strong case for organized private study Class instruction should be lessened in amount and improved in quality in particular where ideals appreciations perspectives and attitudes (*q v*) are concerned the teacher s work should be incomparably more brilliant while the laborious demonstrations which are common in schools should be abbreviated and the pupils after a few stimulating hints be set to work out and apply their own demonstrations

The present writer to the best of his remembrance could never completely follow the logical demonstration of any instructor No pupil s mind works exactly along the lines of his instructor s and probably in most cases when the latter asks Do you see that ? or Is that clear ? and the pupils reply ' Yes " their assent is a matter of politeness or subserviency rather than of conviction We see things in a flash after working alone, and we may see them days or weeks after the date of the supposed demonstration Needless to add a demonstration that flashes upon the inward eye is more exhilarating and influential than one negotiated—if it *can* be negotiated—from outside

There is another consideration that points to the development of organized private study in schools In too many cases the last year of a bright child s school career is cruelly wasted He has reached the top class before his fellows and there he stays " recapitulating ' stale work instead of sighting new vistas or realizing new powers

The practical inference is that a system of private study closely correlated with the use of the school library (*q v*) the public library (*q v*) and reference books should be in operation in the upper classes if not throughout the school Fortnightly or monthly schemes of work may be graphed or printed, and thus equipped the pupils may be left almost wholly to themselves during the given period the teacher merely resolving himself into a court of appeal when serious difficulties arise Lessons in the other factors above referred to (" appreciations " etc) would not, however come under this scheme

The common reproach that our schools turn out boys and girls who are " helpless ' would so far as it is valid be thus removed F H H

REFORM METHOD OF LANGUAGE TEACHING —(See FRENCH INFLUENCE ON ENGLISH EDUCATION)

REFORMATORY AND INDUSTRIAL SCHOOLS —A reformatory is a certified school for the reception of youthful offenders where they are maintained educated and instructed in manual work Industrial schools are similar in character to reformatories and are provided for younger children Both are under the Home Office and are certified as efficient by the chief inspector appointed to inspect these schools

The first inspector was the Rev Sidney Turner afterwards Dean of Ripon and it was greatly owing to him the late Earl of Shaftesbury and William Gladstone that organized efforts for the betterment of the conditions of the young criminal class received the attention of Parliamentary committees

When an offender between 14 and 16 has been convicted of an offence punishable in the case of an adult by penal servitude or imprisonment he may be sent to a reformatory for from three to five years the detention however not to extend beyond the age of 19

Children between 12 and 14 found begging wandering destitute or living with parents in criminal or similar undesirable conditions may be brought before a petty sessional court and sent to an industrial school for any period thought proper up to the age of 16

Inmates of certified schools may at any time with the consent of the local authority placing them there or by the Secretary of State be sent out on a licence, which is immediately revocable if its terms are broken The punishment for escaping from the school is severe (*e g* additional detention for six months or imprisonment for three months the period of detention being afterwards fulfilled)

For assisting to escape or harbouring a fine not exceeding £20 or two months imprisonment with or without hard labour may be inflicted

Administration and Control Expenses connected with reformatory schools are defrayed by Parliamentary county and borough council grants

Expenses connected with industrial schools are met by the local education authority providing for the reception of the children

The Philanthropic Farm School at Redhill represents another class of reformatory This pioneer school of reform takes in children from many parts of the country and depends for its upkeep on the Parliamentary grant the money paid by the various authorities for their children and for any further deficit on those interested in the work of aid and reform

The first Reformatory Act was passed in 1854 and there are in England now 31 reformatory schools for boys and 9 for girls and in Scotland 5 for boys and 2 for girls There are about 180 industrial schools in England and Scotland, providing accommodation for over 30 000 children

After Careers of Inmates The imagination pictures a sordid state of affairs in these institutions for young criminals but a visit to them often completely alters the preconceived notion of life under detention The inmates are brought

up to industrial pursuits and are taught trades and occupations fitting them for their after life and especially as colonists Mostly it is environment rather than natural tendency that produces the youthful criminal and removed from slums and a criminal atmosphere and placed under open air conditions the young misdemeanant frequently reveals an enterprising brave and independent disposition which guided aright makes him a valuable asset to his country

In the case of one large institution the discharges for the four years prior to 1914 numbered 302 Of these in 1916 98 were located in London 54 were in provincial towns and country places 80 were colonists 8 were in the Navy 56 in the Army 4 in prison and only 2 had addresses unknown to the school

Thus the detention of these youthful offenders under discipline where *esprit de corps* manly exercises and habitual training in work are encouraged proves of incalculable worth

J F T

REFUGEES (ENGLISH) AND EDUCATION — (See EXILES (ENGLISH) AND EDUCATION)

REFUGEES (RELIGIOUS) IN ENGLAND —One of the earliest refugees a Lutheran was Peter Valence a Norman who came to England (*c* 1515) Two royal tutors John Belmain in French (1546) and Baptista Castiglione in Italian were religious refugees In 1531 the lover of the Reformation Simon Grynaeus was in Oxford In 1547 the two Italians Bernardino Ochino and Peter Martyr Vermigli arrived In 1552 the Swiss refugee Augustine Bernher collected Latimer s sermons It is difficult to estimate the influence of Vermigli who was at one time or another a professor at Strassburg Oxford and Zurich The Spanish refugee Francis Enzinas or Dryander was Greek reader at Cambridge 1549 where there was a succession of refugee professors of Hebrew—Fagius Tremellius Chevallier and Bignon—and the famous foreign divine Martin Bucer became professor of divinity also in 1549 John Drusius son of a refugee in England became reader of Hebrew at Oxford in 1572 and lectured there on Syriac One of the most active introducers of Oriental languages into England was the refugee Christian Ravis who had spent eight years in foreign academies and had collected Oriental MSS in the East He was Fellow of Magdalen College Oxford in 1648 Alberico Gentilis (1552–1608) came to England about 1590 and by his attempt to ground international law on a non theological basis anticipated Grotius Milton s friend Charles Diodati was the nephew of John Diodati who published the Italian version of the Bible in 1607 The great Greek scholar James Duport came of a family of settlers in England (not religious refugees) as far back as Henry IV s reign But besides professors England received recruits from refugees—in publishers such as Berthelet in Henry VIII s reign and Vautrollier in the reign of Queen Elizabeth A sub librarian of the Bodleian Library was a Huguenot (Jean Verneuil) and in the first half of the seventeenth century it is said that there were readers in the Bodleian from nine different nations

Pastors of Refugee Congregations For religious refugees in general the year 1550 marks the provision by letters patent of a church the Dutch Church of which the first superintendent was the famous John à Lasco a Polish refugee who had lived at Basle in 1524–1525 with Erasmus and to whom Erasmus sold his books some time before his death in 1536 The appointment of à Lasco was that of superintendent over schools of learning and education of foreigners in London as well as over the churches showing the close connection maintained by refugees between religion and education One of the ministers of the Austin Friars Dutch Church was the Italian refugee Michael Angelo Florio the Italian Protestant who preached to the Italians Florio also taught his own language and wrote a manual (not published) the *Regola della Lingua Toscana* Roger Ascham (*q v*) in the *Schoolmaster* 1570 adversely criticizes the young English gentlemen who frequented Florio s Italian church to hear the Italian tongue naturally spoken Florio s son John Florio (? 1553-1625) continued and developed his father s work in teaching Italian He was the contemporary of Shakespeare and if the latter knew Italian it was probably due to Florio s teaching for we know that Shakespeare lodged in the house of a Huguenot refugee and may therefore have come into contact with his landlord s co religionists After teaching languages at Oxford John Florio entered the service of Lord Southampton a further ground for the likelihood of Shakespeare and Florio being acquaintances In 1578 Florio wrote his *First Fruits* as an Introduction to the Italian and English tongues and in 1591 there followed the *Second Fruits* These books consist of dialogues which are interesting as affording details of the age of Elizabeth His most important work educationally was his *World of Words* (1598) an Italian dictionary afterwards issued as *Queen Anne s New World of Words* in 1611 and finally revised and edited by the Italian refugee Giovanni Torriano who added an English Italian part in 1659 In this dictionary Florio attempted to do for Italian what Sir Thomas Elyot and Bishop Cooper had done for the Latin and what the Estiennes had done for the Greek dictionaries

The direct effect of refugees in developing the teaching of their own language in the country of their adoption is traced in each of the articles FRENCH HISTORY OF THE TEACHING OF GERMAN HISTORY OF THE TEACHING OF ITALIAN HISTORY OF THE TEACHING OF and SPANISH HISTORY OF THE TEACHING OF The exiles were naturally men of an independent type of mind often scholarly generally intellectual and on the whole progressive and at any rate relatively open minded except in their religious views which they had adopted and maintained at the risk of their lives The refugee teachers therefore were often not content simply to develop methods of language teaching but also took part in other social activities Thus Pierre Erondell helped Hakluyt in translating accounts of French colonization

The Lines on which Refugees have Influenced English Education No direction of influence on the part of religious refugees is more notable than the development of the technical arts and trades the knowledge of and skill in which they brought from their own countries This aspect has been fully treated by Samuel Smiles in *The Huguenots their Settlements Churches and Industries in England and Ireland* and by Dr Cunningham in his *Alien Immigrants to England* But the greatest educational gifts to England which refugees have

brought in the past have been those of the most intellectual type They have supplied the country with distinguished theologians physicians lawyers They have given an intellectual prestige to their successful commercial as well as professional men They have brought England into contact and communication with the most distinguished literary and scientific men abroad Samuel Hartlib a foreign refugee in the Commonwealth period brought an international ideal into the educational outlook of England, such as the returned English exiles (*q v*) from Switzerland in the sixteenth century brought into the religious life of England Had it not been for the Great Civil War John Amos Comenius (*q v*) might have had placed in his hands the organization of English higher education The international side of the work of the Royal Society in England owes much to the foreign refugees Haak Oldenburg Mercator Ent Calchof Malpighi Sir Christopher Wren is stated to have been of Danish origin Of the refugees up to the earlier part of the eighteenth century the name of Denis Papin de Moivre Durand Desaguliers Desmaizeaux are amongst the most famous in English annals of science of the eighteenth century The high intellectual strain of the Huguenots on English soil has continued to affect favourably the educational progress of England to an extent altogether out of proportion to the numbers of the surviving descendants of original refugees Every direction of educational activity has been strengthened the universities the Royal Society the schools of every type Particularly the best private school is of the eighteenth century and the dissenting academies where the most progressive education of the eighteenth century was to be found profited by the co-operation of refugees F W

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REGENT STREET POLYTECHNIC —(See POLYTECHNICS THE LONDON)

REGIONAL ASSOCIATION, THE —This was founded in London in 1918 as the result of the activities of a number of people brought together by a Committee formed at an Easter gathering at the Outlook Tower Edinburgh in 1914 under the inspiration and presidency of Professor Patrick Geddes

Its aims are to promote the intensive study of particular regions with a view to encouraging enlightened service in such regions and to do this by assisting individuals who have special interests or points of view and local groups and branches of various associations to bring together the results of their work and to co operate in the solution of local problems always studying its locality in comparison with others holding exhibitions of such surveys open to the public encouraging educational experiment in the direct and synthetic study of environment, arranging conferences to discuss methods and problems arranging also for the publication of explanatory and advisory pamphlets creating panels of experts to give directly, and through various associations, advice on the work

It is claimed that this comprehensive survey work results in the school, in a more vital education, bringing it into direct contact with the life of the community and in producing in the community a more vital citizenship by showing the way to reforms of all sorts

It should further lead to a sounder knowledge and more sympathetic understanding of the forces underlying the life of any community and therefore of other peoples

The Hon Sec is willing to answer inquiries and to receive data for the compilation of a list of surveys in progress

Membership of the Association means possibilities of co operation and of obtaining advice and help both through conferences and through published pamphlets Moreover it means the formation of a body of opinion of weight which should influence civic and international progress It is open to all who are concerned for the right development of their own neighbourhood and for the enlightened training of its citizens as well as for the furtherance of international sympathies

The *Sociological Review* may be had on special terms to members

REGIONAL SURVEY IN EDUCATION —There is a tendency in education to emphasize the systematizing powers for they furnish us with criteria of truth tests of accuracy difficult to find among the feelings among the visions which nevertheless waken harmonies from the depths of personality It has thus come to pass that some old established educational disciplines have become stereotyped and lost their feeling for life A study therefore in which the feeling for life would be instinctively developed has its value in an educational scheme and this it is claimed is true of Regional Study if undertaken on broad lines

It is true that the efforts of educationists some years ago in a direction seemingly akin to this were such a failure that a Board of Education circular advising teachers of geography to begin with their own area was superseded by a newer one The fact is however that the local study then suggested was of the categorical classificatory type it wished to know boundaries area and so on of the region studied and this was made the starting-point around which gathered *minutiae* of many kinds from diverse specialisms The idea of Regional Survey starts from the opposite pole it looks upon the earth s surface as that upon which we express ourselves and it realizes that the forms of expression are necessarily conditioned by the facts of rock and soil climate and elevation vegetation and animal life It is nevertheless ever studying one thing namely the evolution of human expression

The "regional surveyor may therefore begin his work by studying any form of human expression, or even any of the physical factors which condition it He will remain truest to his aim if he study his facts distributionally for the attempt to record occurrences on a map soon leads on to valuable study of the causes of such occurrences and to the linking of several lines of study Regional survey is thus a safeguard against loss of illumination through undue specialism It will be found that the areas of distribution for the various facts studied have complex inter relations, but are not coincident In other words, the surveyor is well advised if he

avoids any sharp delimitation of area, it will, no doubt, vary for the different parts of the work, and this should make him think of the region as the field of man s activities rather than of man as purely a dependent upon his region

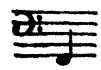
From one aspect of the problem, the surveyor will be led on to successions of others, until he will have developed something of a vision of the life of his region

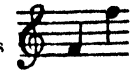
The Extent of a Region For one man the region for study will be larger than for another but for all it will be some region not too large to allow one to keep in close touch with it all

It is conceivable that a worker might become so absorbed in his own region as to think of it alone and this parochialism is a danger But the work approached in the right spirit the evolution of life in the region becomes a mirror of the general evolu tion of our civilization and by studying our region in this way we are lifted above that other type of study which was concerned in emphasizing the detail that Henry VII slept in a certain house in the dis trict on his way to Bosworth Field but passed very lightly over the enclosure movements of Tudor times

Comparison with other regions step by step is an obvious necessity No other method will lead us so surely to the significant facts about our region St Davids becomes understandable when we know Canterbury and Winchester as foci of landing places of the past entries for Continental influences St Davids is a like focus for travellers from Ireland the fount of Celtic Christianity Moreover regional survey gives us a generous outlook for the study of other regions far away we instinctively see them as regions in which the interaction of man and environ- ment has led to certain results not as regions which are either more or less advanced than ourselves Regional survey can thus be an important help towards that reinstatement of the idea of our citizenship of civilization which is so important a need at the present time

Regional survey has been tried with brilliant results in a slum school in Lambeth It is the life and soul of good civic museums and local scientific societies It has been found an inspiration in train ing colleges its value has been demonstrated far and wide in secondary educational work In a university it naturally tends towards the supplying of expert opinion on local problems but especially in Wales it has been seen that an expert is often of little use alone it is when several experts combine that we get new correlations and a new vision In university extension work and the classes of the Workers' Educational Association, there is special opportunity for regional surveys applied to housing public health and welfare problems H J F

REGISTER (VOICE).—This is the range of musical notes which can be produced by the vocal organs of an individual The vocal cords resemble two strips of indiarubber laid across the wide mouth of a tube, with a thin chink between them The larynx has the power of modifying the tension form, and length of the cords as well as the dis tance between them A man with a bass voice has longer vocal cords than a child or a woman, if the cords are long and slender the voice is flexible and the cords readily vibrate A small larynx produces a high-pitched voice The whole mechanism of a single voice can be divided into (1) *thick* the cords vibrating in thick masses, (2) *thin*, cords vibrating in their thin edges only, (3) *small*, the vibrating chink of the glottis reduced in length The thick register usually extends downwards fron  in all voices to  in bass  in tenor,  in contralto, and  in soprano

All notes above  are in the thin register (the male falsetto) and in female voices the normal register is  The thick register contains the chest notes the higher notes being produced by confining the vibration to the edges of the vocal cords and the narrowing of the vocal chink Beyond F the soprano has a ' small ' register

REGISTRATION.—(See TEACHERS REGISTRATION COUNCIL THE)

REID, THOMAS (1710–1796)—The founder of the Scottish school of philosophy, was a minister of the Church of Scotland, and in 1752, became a regent in King s College Aberdeen His *Inquiry into the Human Mind*, in 1764 led to his appoint ment as Professor of Moral Philosophy at Glasgow in succession to Adam Smith He retired in 1780, and produced two volumes of *Essays on the Intel lectual and on the Active Powers of Man* from his class lectures

Like Kant he was " awakened from his dogmatic slumbers by the philosophy of Hume To avoid the sceptical conclusions Hume had drawn from Locke s views which he recognized were inevitable if the sensationalist premises were accepted, he denied that human knowledge grows out of ideas passively received through the senses To the attempt made to explain thought in terms of unitary sensations, he opposed the wider experience of humanity or, as he called it, common sense The analysis of the mind, he maintained shows that thought does not begin with passive sensations, but with active judgments, and that these judgments presuppose certain first principles which belong to the very constitution of the mind Such principles as the reality of the thinking subject, and the neces- sary connection of cause and effect which Hume had refused to admit because they have no ground in sensory experience, stand in no need of justifica- tion They are self-evident, and must be accepted if one is to think at all

In following this line of argument, Reid allies himself with those thinkers of his age who, in one form or another, regard what the mind contribute to thought as more fundamental than what it receives from experience notably with Kant in philosophy and Rousseau in education In the only passage of his works in which he deals with education at any length (*The Human Mind*, VI 24), there is a general similarity with the views of Rousseau He distinguishes three stages in education—

1 The first is natural education, w ich begins in childhood with the use of the hands, and involves

the forming of habits of perception by the constant observation of things in the course of childish play and the exercise of body and mind that comes from movements made to satisfy desire

2 Human education extends the range of habits thus formed "It is the intention of nature that human education should be joined to her institution to form the man And she hath fitted him for human education by the natural principles of imitation and credulity which discover themselves almost in infancy" In the absence of reason in childhood the child needs to learn from his elders and willingly does so because of the primitive credulity the regard due to human testimony in matters of fact and even to authority in matters of principle

3 Most people never go beyond the second stage because they guide their lives by authority far more than by reason For the few however there is a still higher education "Human education joined to that of nature may make a good citizen a skilful artisan or a well bred man but reason and reflection must superadd their tutory in order to produce a Rousseau a Bacon or a Newton

All this is very general for the simple reason that Reid had no special interest in ordinary education His interests all lay inside the university In the closing years of his life he wrote a long article on 'The University of Glasgow' for the first volume of *The Statistical Account of Scotland* This was published in 1799 three years after his death

W BOYD

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RELATIVITY, THE PRINCIPLE OF —The consistent failure of all attempts to discover any physical phenomena attributable to the relative motion of the earth and the luminiferous ether culminating in the classical experiment of Michelson and Morley led Professor A Einstein of Berne to formulate in 1905 (*Annalen der Physik* 17 p 891) the Principle of Relativity the primary assumption of which is that it is impossible by any physical (electrical or optical) means to discover absolute rest or motion with respect to the ether of space More explicitly the Principle asserts that the laws governing physical processes remain the same to whichever of two systems of co-ordinates in uniform rectilinear motion relatively to each other they may be referred And further that the velocity of propagation of light is independent of the velocity of the source emitting it On these two assumptions Einstein and later Minkowski (*Raum und Zeit*) built up a new system of physics of moving bodies which while in harmony with all phenomena hitherto observed leads to some very remarkable and novel conclusions One of these conclusions is that the "mass" of a body is simply a measure of its latent energy a gram being the equivalent of 9×10^{20} ergs a figure which is numerically equal to the square of the velocity of light The converse conclusion that energy has inertia and mass was embodied by Einstein in the prediction that a beam of light should be sensibly deflected by a powerful gravitational field such as that of the sun

An idea of the mathematical working of the Principle may be given as follows Suppose that two observers say on board two ships in a fog were to ascertain their distance apart by means of fog signals The observer A would sound a signal and observer B would make his reply immediately on hearing the signal from A Observer A would note the time elapsing between the transmission of his own signal and the receipt of the answer This time divided by the known velocity of sound would give him twice the distance separating the two ships If however a wind begins to blow from one ship towards the other with a speed v the velocity of sound (c) will be $v + c$ in one direction and $c - v$ in the opposite direction The time taken by the signal to go and return will be longer than before in the ratio 1 to $\sqrt{1 - \frac{v^2}{c^2}}$ If now it should become impossible for the observers to detect the presence of any wind or to determine its velocity (a case analogous to the impossibility of detecting any drift or displacement of the ether as postulated by Einstein) the only conclusion they could attain would be that the distance between the ships had increased in the same ratio If on the other hand they had reason to think that a wind blew and found no apparent difference in the time of transit they would conclude that the distance had diminished This diminution is the so-called FitzGerald Lorentz shrinkage which was formerly postulated to account for the result of the Michelson Morley experiment

E E F D A

RELIGION, PRIMITIVE —(See ANIMISM)

RELIGIOUS ASPECTS OF SCHOOL GOVERNMENT —Before the year 1870 schools giving elementary education were as a rule under some form of management provided by the religious denomination with which they were connected Frequently provision for management was made when the land and school buildings were given or purchased As they obtained part of their support from voluntary contributions they were generally known as Voluntary schools The Education Act of 1870 authorized the establishment of undenominational schools but the voluntary schools remained and their management continued to be denominational Every school seeking Parliamentary grants was supposed to have a committee of management and managers were required to sign the returns demanded by the Government but while in some cases the managerial body consisted of the vicar and churchwardens representatives of the parents representatives of the subscribers and so forth—elections of these managers being held regularly—in others the management became so restricted as to be in practice vested in the local clergy The managers appointed the teachers fixed their salaries often determined their duties both in and out of school controlled the religious teaching and (subject to the Regulations of the Board of Education) specified the character of the secular instruction The undenominational schools had such bodies of managers as the School Boards pleased to appoint This state of affairs existed until the passing of the Education Act of 1902 Under that Act (*q v*) it became necessary that the managerial body should contain as a rule four foundation managers (persons in sympathy with the denominational character of the school), and two representatives appointed

by the County Borough or Urban District Council or if a greater number then in like proportion

Effect of the Act of 1902 At first sight it would appear that control of the voluntary school by denominational representatives was preserved as they were in a clear majority But it must be remembered that the control of all secular education had become vested in the new Local Authority that the managers are required to carry out any directions respecting secular instruction given by that Authority and that these directions can be enforced by the Local Authority refusing to continue to maintain the school Further the consent of the Authority is required to the appointment of all teachers and also to their dismissal unless that be founded on educational grounds A large number of trust deeds came up for revision and schemes were formulated by the Board of Education incorporating the provisions of the Act and giving effect as far as possible to the desires of those who had established the school Thus the religious teaching is reserved to the managers without any interference by the Local Authority Moreover the former have the right to withdraw the children of their faith from school attendance on days of obligation such as Ascension Day On the other hand the Authority can keep the school open on such days and require the attendance of the teaching staff

Experience shows that Foundation and Local AuthorityManagers usually co operate harmoniously They understand each other s views with regard to the schools and they carry out their duties under the direction of the Local Authority without friction Concurrently with the passing of the Education Act of 1902 certain changes were made in the regulations of the Board of Education by which the performance by teachers of duties not connected with the school cannot now be made a condition of appointment

It is perhaps a fair summary to say that while denominational influence continues in non provided or voluntary schools denominational government has been very materially restricted E GRAY

RELIGIOUS TEACHING IN STATE-SUPPORTED SCHOOLS —From the Christian standpoint every child has a duty towards God as well as its duty towards the world For both of these duties every child should be educated that is not merely informed about them but trained to the performance of them—trained spiritually mentally and physically The child that is not so trained suffers wrong from those with whom the responsibility for training lies So far all Christian persons are agreed But with whom does the responsibility lie ? It is here that disagreement is found

All are agreed that a responsibility rests on the parents but it is equally certain that parental equipment for the work is too often quite inadequate not only from defect of will but even more from defect of fitness and of opportunity To remedy these defects the State has interfered considerably with parental control over children, insisting, first that every child must be adequately educated for the duties of citizenship and that if it is not being adequately educated it must between certain ages attend State-provided or State-controlled schools

The Neutrality of the State The Church of England preference is for State controlled as against State-provided schools, that is for denominational schools controlled by the State as against schools which have no connection with any religious denomination

The reason for this preference is the extreme difficulty of securing in any other way a real neutrality of the State in the matter of education For that neutrality is in fact broken whether the State in its schools gives no religious instruction at all or gives some kind of instruction which is supposed to be equally fair to all denominations Silence upon questions which affect a whole part of the child s being is in fact a denial of the existence of that part—all education being a correlated advance of all the capacities of the child The laws of psychology demand that if the spirit exists at all it must share in the education of mind and body and be educated with them On the other hand the attempt to give some teaching equally fair to all denominations puts the State in the position of suggesting the unimportance of denominational beliefs and of framing in fact a Christianity of its own superior to all other forms of Christianity —a Christianity which is necessarily without creeds or sacraments Not only is the State without authority and without capacity to frame such a religion but it is clear that the endowment of such teaching with ample State resources is really a breach of State neutrality and that it discriminates more seriously against some denominations than against others if there is a difference in this matter among denominations some of them attaching more and others less importance to creeds and sacraments On these grounds the Church of England holds that State neutrality is not really observed either by secular or by undenominational teaching and that the truest neutrality and best religious teaching are to be found in State controlled, as distinguished from State provided schools

The Church's Responsibility Furthermore the Church recognizing the intimate brotherhood of the whole family of God undertakes in its initiatory rite of baptism corporate responsibility for all who are admitted thereto The ideal of the Church for the young is "a Christian home encompassed by a Christian community In pursuance of this ideal it has for many centuries had its schools and colleges and considerable endowments connected therewith But when the State began to enter on the work of education and notably about the middle of the nineteenth century it first of all detached many of these endowments from their exclusively Church connection It then proceeded to supplement State controlled Church schools by State provided schools (Education Act 1870) and afterwards made elementary education first compulsory for all children (Education Act 1876) and afterwards free in all elementary schools (Education Act 1891) It seemed more possible to do so without impairing State neutrality towards denominations because State ideals of education were then very imperfect Information which could be measured by examinations and paid for by results was in those days almost synonymous with education It seemed to follow necessarily that there could be no difficulty in imparting religious information in State provided schools without breach of the State's religious neutrality, so long as denominational formulae were not included in the information imparted

Teacher and Parent It was forgotten how largely the teacher s character and outlook upon life are part of the child s education This oversight was less apparent, because the teachers at that time

were, in fact, trained for their office in religious training colleges, and largely imbued with a religious spirit But educational ideals have advanced in the last half-century Increasing stress has been laid on character-formation as distinct from instruction It has been recognized that religious education demands teachers who are believers in what they teach while the State has no means of estimating religious beliefs and the sincerity of those who hold them Thus arises another ground of preference for State controlled schools in touch with religious denominations We find that sound religious education calls for schools that are in living touch with a Christian community This demand is further emphasized by the increasing demands made by the State on the child's time and the extension of school age It is no longer easy to plead that religious education is an affair of churches and of parents Continuation schools held through a great part of the year, reduce the child's home life especially at the age when religious influence counts for most to a mere feeding and sleeping time at home As the State demands on the child's time increase, so does it become increasingly necessary that the education given at the school should be complete in itself, and not stand in need of outside supplements for which little or no time is left

It is in this connection that the plea of *parental rights* has most force It is not or at all events it should not be contended that parents have a right each of them to control the school curriculum for their child's benefit School education would be impossible on these lines But parents have a right to expect that their children should be educated on sound principles and to insist that education of the body and mind without the spirit is unsound Also since religion is not purely individualistic but realized in external communities parents have a right to insist that the religious education which a child receives should keep him in touch with the religious community to which his parent belongs and emphatically that it should not be a religious education which studiously puts him out of touch with all existing religious communities

The Churchman's Ideal For these reasons then Churchmen contend that the true educational ideal is the State controlled school rather than the State-provided school Starting from their clear and firmly held conception of the child's duty to God and the imperfection if not worse of any education which fails to train him to discharge those duties, conceding also the neutrality of the State towards denominations the Church maintains that the principles of liberty and of sound education demand that the discharge of its duty to God should be an essential part of a child's education The Church ideal as evidenced by the Book of Common Prayer is not weekly worship but daily worship, not Sunday school education, but Sunday and day school religious education It is freely recognized that the interests of the State demand an expenditure on education which cannot be provided by voluntary effort But it is not admitted that, because a rate or tax has been paid for purposes of education it is therefore alienated for ever from every religious use If the State in its own interests insists on education of all children and is by its own basis unable to provide for the highest part of a child's education it should not make such education impossible but should co-operate with those who can make it effective There are limits in the carrying out of this ideal imposed by the demands of school efficiency and by the bewildering multitude of English religious denominations But where it is possible as in most large towns it should receive effect Schools provided in part or entirely by denominations, according to some fixed standard of contribution and controlled by the State should be staffed by competent teachers of whom a sufficient proportion should be chosen or approved by the denominations for the purpose of the religious education of the children and a proper margin of time should be assigned to such education The existence of Diocesan Boards of Finance makes this arrangement far easier now than in the days when the parish was the sole financial agency of the Church Diocesan Boards could undertake responsibilities hitherto impossible for parishes

Where school efficiency requires the existence of one school only a readjustment of existing conditions would not be impossible as soon as and not sooner than the aforegoing principles of education are incorporated in the educational system of the nation

There remains the question of the teachers, and of the interference of denominational interests with their free and unrestricted promotion It would appear as if in a reconstitution of the educational system a distinction would emerge among teachers analogous to the distinction between a tutor and a lecturer Some teachers are qualified by their faith and spiritual life to do justice to the whole being of the child others are not To the former would be entrusted not only the religious instruction in the schools but also such duties and lessons as count most towards character formation The others would be teachers of special subjects When once the higher educational ideal is admitted when education is recognized to be education of the whole man there is no hardship in the fact that those who conform to it should take precedence of their brethren

The same principles apply to religious education in secondary schools Now that teachers are drawn principally from these schools it is even more important than before that the question of religious education in these schools should receive attention Present conditions are very far from being satisfactory There is a real danger that a large section of the teachers of the future will be men and women who in childhood and youth received little or no religious education E A K

RELIGIOUS TESTS FOR TEACHERS —(See LICENSING OF TEACHERS NONCONFORMIST GRIEVANCES IN STATE EDUCATION)

REMEDIES —(See HOLIDAYS IN OLDEN TIMES)

RENAISSANCE, THE (or Revival of Learning) is the term applied to the reaction which set in especially in Italy, against the scholastic system of the Middle Ages by the introduction of the reading of the ancient classical authors of Greece and Rome and the appreciation of the remains of their ancient art treasury In this sense the movement was rather Italian than French and the spelling Renascence more directly derived from Latin than the form *Renaissance* is less misleading Although the reaction against the intellectual stagnation of mediaevalism was wide almost as the mark of human activities—in architecture, painting, sculpture



Salamanca University

PLATE LXXVIII

music, etc —yet the literary aspect of the term Revival of Letters is often specially spoken of as the Renaissance It was expressed in the gradual getting together of libraries of MSS and books, the prosecution of Greek studies and in the gradual division from the narrow methods of metaphysics and logic of the Middle Ages The "Revival" of Learning in reality was the florescence of a movement which can be traced throughout the Middle Ages and which, in the fifteenth and sixteenth centuries, by its brilliancy, dazzled students into overlooking the slow and long period of preparation During the Renaissance, classical scholars poets, grammarians, antiquaries provided the instruments (grammars dictionaries phrase-books, critical texts etc) whereby students deciphered the thoughts and ideas of the ancient world On the vast field of material thus presented the Renaissance students aroused the activity of their minds Eventually by similar methods and instruments of research, they became able in the same scientific spirit, to investigate the outer physical world around them with the advantage of not being separated from it by a long interval of time Hence the beginning of the modern spirit dates from the Renaissance

Greek Studies up to the Fifteenth Century It is a mistake to suppose that Greek studies were entirely lacking from the pursuits of scholars and students throughout the Middle Ages In fact those earlier studies provide the foundation on which the Renaissance of the fifteenth and sixteenth centuries was built and a somewhat detailed study is necessary to illustrate the general principle of the continuity of history in this connection When Theodore of Tarsus himself a Greek visited England in A D 670 and became Archbishop of Canterbury he established some teaching of Greek for Bede states (*c* 731) that pupils trained under his influence knew Greek and Latin as well as the vernacular (*Hist Eccles* IV 2) Alcuin says that in the library at York were contained whatever Greek books had been passed over to Rome Later amongst the Anglo-Saxons, Greek studies declined Boethius called the last of the Romans (A D 470-525) translated at least one text-book from the Greek of Aristotle But later on in the Middle Ages Aristotle was introduced into the schools by means of translations made from the Greek into Arabic, by Arabs then further translated from Arabic into Latin by Jews Thus to Spain through which country these good offices filtered, mediaeval Europe owed a deep debt for even third-hand knowledge of Aristotle and, if re-introduction of Greek studies is the essential feature of a Renaissance then the first Renaissance must be said to have been also Moorish, Jewish, and Spanish As early as *c* 1130 the English Adelard of Bath translated the Arabic version of Euclid into Latin, *c* 1143 Robert of Reading translated Ptolemy from Arabic into Latin *c* 1140 William Shelley, and, *c* 1190, Daniel Morley travelled into Spain and established communication between Toledo and Oxford Later Morley returned to Spain

England as a Pioneer Yet from *c* 1250–*c* 1350 probably England was at the head of European nations in learning Brewer in the *Monumenta Franciscana* (Preface, p lxxxi) says that Lyons, Paris, and Cologne obtained their professors from the English Franciscans at Oxford Foreigners came to study with them and Oxford was second to no university in the world "No nation of the times can show such a succession of names comparable to Roger Bacon (1214–? 1294), Duns Scotus (? 1265–? 1308) and William of Ockham (*d* 1347)" John of Salisbury (*c* 1170) complained that commentaries rather than the text of Aristotle's logical treatises were read The Franciscan, Roger Bacon who died 1294, advocated with enthusiasm the study of Greek The Council of Vienne in 1311, in the time of Pope Clement V, required the teaching of the Hebrew Greek, Arabic, and Chaldaic languages in the Roman Court, and in the Universities of Paris, Oxford, Bologna, and Salamanca, and provided for stipends to teachers by a levy upon prelates monasteries chapters, convents colleges and rectors of churches in each of the countries in which those universities were situated In each university there were to be two teachers of each of these languages, who were to translate books from the language of their chair into Latin, as well as to teach the language In his *Early Education in Worcester* Mr Leach prints from the Chamberlain's account of Worcester Priory the item "for the teacher of the Greeks at Oxford 12d" under the date 1320–1321 and mentions (p xxxix) that there are notices of a Bishop of Winchester ordering the levy sanctioned by the above decree to be paid in his diocese

The Early Italians. Petrarch (1304–1374) collected ancient MSS and coins He was inspired by the sense of patriotic enthusiasm for Rome as the continuator of old culture and knowledge, and the longing for a return to the golden age of the past Petrarch obtained a Greek MS of Homer *c* 1354, which however he was unable to read He secured in 1369 (at the age of 65) a copy of a Latin translation of Homer Ignorant of Greek he was the pioneer of the introduction of Greek culture into Italy 'He was the first,' says Symonds "to understand the value of public libraries, the first to accumulate coins and inscriptions as the sources of accurate historical information, the first to preach the duty of preserving ancient monuments" He was followed by Boccaccio (1313–1375), the first Italian student of the fourteenth century, to read Greek He induced Leontius Pilatus a man of limited knowledge of Byzantine Greek and of restricted knowledge of Latin to translate Homer into Latin and never, probably, has such a worthless translation received such devoted reverence In England Geoffrey Chaucer showed in many directions a freshness and vigour of new life more marked than any Italian of his century, but the difference of the attraction to Greek studies from Italian actually *in situ* in the midst of the old Roman traditions made them rather than him the inspirers of the main direction of the new learning and culture For all the indications of Greek studies in England were exotic and, as the culture of Greek had not been without witness in our country in the fourteenth century so in the fifteenth century Englishmen were not unwilling followers of the New Learning, but it was to Italy they had to look for leaders, as indeed, in the preceding centuries it had been from Spain mostly they had brought the chief inspiration for such Greek as they possessed

The Italian Trecento. The discovery of Latin manuscripts became a keen quest in the fourteenth century Besides Petrarch and Boccaccio should be mentioned Salutati the Secretary of Florence, who completed the discovery of Cicero's *Letters* the first half of which had been found by Petrarch

Cosmo de Medici the humanist duke of Florence secured the services of Niccolò de Niccoli (1363–1437) in the collection and copying of ancient MSS Then came Poggio Bracciolini who about 1416 discovered a copy of Quintilian (*q v*) more complete than any previously known at the Monastery of St Gallen This discovery marks an epoch in the development of the Renaissance in its stimulation of further search for MSS as well as for its intrinsic value Cardinal Beaufort induced Poggio to visit England but he was impatient at his lack of success in finding ancient MSS in English monasteries Altogether Poggio is said to have had a part in the recovery of works of six poets and nine prose writers Further ancient MSS were brought to light by Aurispa (who in 1422 brought 238 MSS from Constantinople) and by Filelfo in 1427 Cardinal Bessarion gave his Greek MSS to Venice in 1468 and Janus Lascaris brought many MSS to Florence in 1492 From such collections were started the great libraries of Lorenzo the Magnificent at Florence the Library at Urbino and the library of St Mark's at Venice and the Vatican at Rome The search for antiquities was also a feature of the fourteenth century beginning with Ciriaco of Ancoa (1391–1450) who described his quest as that of 'awakening the dead from their graves' He was followed by the famous Flavio Biondo of Forli who wrote the *Italia Illustrata* in which he re traced the buildings of antiquity (as far as this could be done)

Chrysoloras The decisive introduction of Greek as an effective educational event is associated with the arrival in Italy of Manuel Chrysoloras a member of a noble family of Constantinople and the greatest Greek scholar of the age in 1393 In Florence he taught Greek from 1396 till 1400 In 1402 Chrysoloras was invited to Pavia and later he visited Venice Paris London and Rome He wrote a Greek grammar *The Erotemata* Theodore Gaza of Thessalonica which city was devastated by the Turks in 1430 went to Mantua where he learned Latin and in 1441 became Professor of Greek in the University of Ferrara He then lived first in the service of Pope Nicholas V and afterwards in that of Alphonso King of Naples

Gaza and George Trapezuntius Gaza died in 1478 He is reported to have been the most scholarly of all the Greeks who came over to the West of Europe George of Trebizond (1395–1480) taught Greek at Vicenza at Venice and then at Rome where he became secretary of Pope Nicholas V and in 1452 proceeded to Naples to the Court of Alphonso Like Gaza he translated many Greek works into Latin thus making them known to students in all countries John Bessarion was a priest of the Greek Church In 1439 he seceded to the Church of Rome became a cardinal and on the death of Nicholas V nearly became Pope He was an active pleader for a crusade against the Turks It was to Bessarion Venice was indebted for the collection of books, said to have cost 30 000 crowns which formed the basis of St Mark's Library Gaza George Trapezuntius and Bessarion engaged in a disputation as to the prior claims of Aristotle and Plato The two former favoured Aristotle but Bessarion championed Plato and his influence greatly strengthened the Platonic bent of the Florentine Academy of Ficino Politian (1454–1494) Pico della Mirandola (1463–1494) and Filelfo and Perotti who became the Italian leaders of Greek studies in the latter part of the fifteenth century

Janus Lascaris Such a list shows how inadequate is the statement that Greek studies were introduced into Italy only after the fall of Constantinople in 1453 After that event however, the succession of Greek scholars to Italy was *maintained* and even increased in numbers and included such important men as John Argyropulus Demetrius Chalcondyles J A Callistus Constantinus Lascaris and his son Janus Lascaris The elder Lascaris wrote a Greek grammar The younger Lascaris became the first principal and superintendent of the Greek press at Rome Janus Lascaris helped King Francis I in 1517 in the formation of the French Royal Library and was the teacher of the great French Grecian G Budé and then returned to Rome under the papacy of Clement VII where he died in 1535

Giovanni da Ravenna at Padua (1382) was later termed the Trojan horse from which the scholars emerged who roused throughout Northern Italy the zeal and enthusiasm especially for Ciceronian scholarship

Guarino da Verona (*q v*) and Vittorino da Feltre (*q v*) were practical teachers The Renaissance movement represented by Vergerius and Bruni supported its claims to educational enthusiasm on the teaching of Latin alone whilst the Renaissance spirit had its beginning in the revival of interest in Roman antiquities it was re inforced by Greek studies which were only fully developed in the *whole course of the fifteenth century* and duly produced the great scholars Budaeus (*q v*) Dolet the Estiennes and the Scaligers (*q v*) in the sixteenth century whilst the famous Greek scholar Isaac Casaubon's (*q v*) later life runs into the earlier years of the seventeenth century All these later leaders belong to the French Renaissance

Guarino da Verona The early part of the fifteenth century (*quattro cento*) Renaissance educationally centres round the names of the great teachers Guarino da Verona (1374–1460) and Vittorino da Feltre (1378–1446) Guarino was able to teach Greek having learned Greek by a journey to Greece where he lived five years and on his return to Italy had been received into the household of Chrysoloras whom he had succeeded in the Chair of Greek in the studio at Florence in 1412 He then taught at Venice where Vittorino da Feltre was one of his pupils As a Greek scholar and as a textual critic of Latin writings Guarino held the highest esteem It was to Guarino whilst teaching at Ferrara that English students first came to Italy particularly John Tiptoft Earl of Worcester Robert Fleming William Gray John Gunthorpe and John Free

Vittorino da Feltre is even more attractive than Guarino as a personality W H Woodward calls him 'the first modern schoolmaster' In his school the best of individualism derived from the saint and the knight met the best scholarship of the Renaissance return to the Greek and Roman culture Guarino and Vittorino count among the great teachers of the world All that their age was able to write on educational principles underlying their teaching is contained in the treatises P P Vergerius *de Ingenuis Moribus* 1392 and Lionardo Bruni d Arezzo *de Studiis et Literis c* 1405 (for which see W H Woodward's *Vittorino da Feltre and other Humanist Educators*) The other Italian courts followed the examples of Ferrara and Mantua Thus Florence in the second half of the

fifteenth century became under Lorenzo de Medici, the Magnificent (1448–1492), what Athens had been to ancient Greece in the times of Pericles It was not merely a question of scholarship, but also a revival of artistic activity in every direction The scholars Filcino Politian (1454–1494) and Pico della Mirandola (1463–1495) held their Platonic Academy in villas just under Fiesole overlooking Florence Painting sculpture and architecture also flourished at their height one of the clients of Lorenzo being Michael Angelo In the recoil against the ascetic and narrow tendencies of the Middle Ages Christianity became tinged with attractive aspects of Paganism and all the old standards of thought and life were brought to the crucible of criticism—and iconoclasticism

Laurentius Valla In the first half of the fifteenth century Laurentius Valla s great book *de Elegantiis Latinae Linguae* (*c* 1440) brought together the best of the results to be found in the ancient grammarians He gave special attention to synonyms He is the first great philological critic extending his criticism in 1444 to the Vulgate Version of the New Testament by a rendering of the Greek Erasmus published Valla s criticisms in 1505 and the two great names Valla and Erasmus are thus joined as the earliest advocates of applying the same sort of textual and expository criticism to the New Testament which scholars applied to the classical writers of Greece and Rome The educational programmes which naturally lagged behind the scholarly research of the period are to be found in the treatise of Aeneas Sylvius Piccolomini afterwards Pius II *de Liberorum Educatione* A D 1450 and the short tractate by Ballista Guarino (son of Guarino of Verona) *de Ordine Docendi et Studendi* A D 1459

The Later Part of the Fifteenth Century is marked by the development of Ciceronianism (see *Ciceronianism*) The second half of the fifteenth century in Italy is dominated by the name of Politian as the first half is crowned by that of Valla The worship of a model of style and the severance of the unity of matter and style led to the downfall of Italian supremacy in the Renaissance From the first half of the sixteenth century the main stream of culture passed on to the North because leaders like Erasmus were determined to use the old-world literary treasures of antiquity and the linguistic resources of Latin to the purposes of a modern world which by no legerdemain could antiquity express and to which antiquity could not arbitrarily dictate The Italian Renaissance had initiated and developed hosts of commentators translators textual writers grammarians dictionary makers antiquaries researchers to explain and illuminate and to recover an old world But this spirit of inquiry and speculation and discovery the energy of progressive life which it had created had to be transferred into the discovery of new worlds of thought in science and philosophy and new instruments of extension in vernaculars in which the old classical literatures and atmospheres could not be entirely absorbed in concrete detail but take their place in the new life of the enlarging interests of the modern world, in the light of the doctrine of historical continuity

England and the Italian Renaissance Sir John Mandeville in his *Travels* (1366) shows some acquaintance with Greek by quoting the Greek alphabet and copying inscriptions from the Church of the Holy Sepulchre, Jerusalem English scholars visited the Italian universities In 1373, four students of law appear in the list of English scholars at Padua (Andrich *de Natione Anglica et Scota Universitatis Patavinae* p 171) and in 1457 John Chelworth was Rector of the jurists at Padua, and about the same time Reynold Chicheley was rector of the University of Ferrara In 1395, an Augustinian monk Thomas of England had been praised by Leonardo Bruni with the somewhat modified eulogy that he must warmly have loved Renaissance studies "as much as an Englishman is able Thomas however secured MSS and is said to have lectured at Florence Equally striking on the other hand is the visit to England of the Italian scholars Chrysoloras (*c* 1410) Poggio (in 1421) and in 1435 Aeneas Sylvius afterwards Pope Pius II •In 1425 Oxford University commends John Norton visiting Rome to the Pope and in 1429 Roger Bulkeley is similarly commended by the University (Anstey *Epistolae Academicae* Oxford Historical Society) Such examples show the continuity of English scholarship on Italian soil and indicate readiness in the English scholars to look for help to Italy as they had previously looked to Spain It is however with Humphrey Duke of Gloucester that the first high waves of the Italian Renaissance reached the shores of England

The Group of Scholars connected with Humphrey, Duke of Gloucester Whilst Cardinal Beaufort had brought Poggio to England his rival Humphrey Duke of Gloucester (1391–1447) surpassed him in his attachment to the progress of letters Lapo da Castiglionchio came to visit him equipped with renderings from the Greek of Plutarch's *Lives* One outstanding honour in return for patronage was the dedication to Humphrey by the Italian Pier Candido Decembrio of the translation into Latin of Plato s *Republic* in 1441 This translation had been begun by Chrysoloras continued by the elder and completed by the younger Decembrio Lastly must be mentioned Vincent Clemant to whom Oxford University granted a testimonial letter in 1433 a student from Italy though possibly a Spaniard by birth who corresponded with Thomas Beckynton Bishop of Wells a humanist in close touch with Italian scholars including Flavius Blondus Richard Petworth secretary to Cardinal Beaufort and the better known scholars William Grey John Free John Gunthorpe Robert Fleming and John Tiptoft (Earl of Worcester) visited Italy They were chiefly connected with Balliol College Oxford and also form a group connected in Italy at Ferrara by their relations with Guarino da Verona

In 1443 Andrew Huls was on a visit to Rome, together with Richard Caunton and W Symond Huls s mission to Italy was that of copying MS books Vespasian the writer of biographies in the fifteenth century says that Huls collected so many MSS that he was obliged to send them by ship instead of sending them overland He was better known in Italy than in England

Tiptoft (1427–1470) proved himself a patron of letters and followed in the footsteps of Humphrey himself The story is told that Pope Pius II wept for joy on hearing Tiptoft an Englishman speak so eloquently in Latin Still Humphrey, Duke of Gloucester (1391–1447) ranks as the greatest advancer of learning of the fifteenth century He was the patron of the English Lydgate and Lapgrove as well as of the Italians mentioned and the bestower of books, especially Greek MSS , on the

University of Oxford, which in 1441 wrote its thanks Humphrey is thus for England parallel with the Gonzaghi of Mantua and a Maecenas on a less scale with the Medici, but the predecessor of Cosmo by a century

Linacre and his Immediate Predecessors In 1464 William of Selling near Canterbury together with William Hadley, pursued studies in Italy at Padua Bologna and Rome and brought back MSS for the monastery of Christchurch at Canterbury where he became prior in 1472 Unfortunately this library was a few years later destroyed by fire Next to be mentioned chronologically is the fact that in 1488 Cornelius Vitelli settled at Oxford and that Vitelli is termed by Polydore Vergil the first lecturer of the Renaissance in England One of Vitelli s pupils was William Grocyn (*c* 1446–1519) the first English lecturer on Greek in Oxford He had been preceded in Italy by Thomas Linacre (*c* 1464–1524) the nephew of Selling Linacre had met the great Italian scholars Politian at Florence Hermalaus Barbarus at Rome and Aldus Manutius at Venice In 1492 Linacre graduated in medicine at Padua Linacre founded the College of Physicians in London and he was the pioneer of the large band of classically learned physicians who were connected with the medical practice of that College for so many generations Linacre took European rank from his translation into Latin of the Greek *Sphaera* of Proclus printed by Aldus and of the medical works of Galen the *De Sanitate tuenda* (1517) and *Methodus Medendi* published at Paris (1519) and the *De Temperamentis* at Cambridge (1521)

The Court of Henry VIII To Linacre s group belonged William Latimer and William Lily who became the first head master of Colet s school of St Paul's and the compiler of the authorized Latin Grammar Colet went to Italy 10 years later than Linacre lectured in Oxford on the New Testament (1496–1504) and in 1498 first met Erasmus (*q v*) to whom later he gave financial aid Add to these Thomas More (1478–1535) with Tunstall Mountjoy and Pace all frequenters of the Court of King Henry VIII from his accession in 1509 onwards making the Court more like a university centre for England than a mere royal palace and calling forth the high praise of Erasmus (1464–1536) — It is wonderful how copious a harvest of ancient books flourishes here everywhere Similarly the most typical humanistic centre outside of the Court was in the household of Sir Thomas More known as the School of More at Chelsea More had a love of Greek but also studied French and was fond of music His house was even frequented by the king "It seemed as if some new academy were being created like those of Venice or Florence All sorts of classical exercises were undertaken all sorts of philosophical and social problems discussed and women were welcomed as well as men so that More s influence certainly marks the highest stage of the intellectual development and culture ever reached in England up to his time More s *Utopia* (1516) was published in Louvain and is the beginning of the modern internationalism in English scholars' books

Physicians (*e g* Linacre Gilbert Harvey) were classical scholars and carried forward Renaissance impulses and the adaptation of Renaissance inductive methods into the study of the physical world Modern science hence derived impulse from the Renaissance Similarly the development of nationalities and their vernaculars and their individual literatures, took from the Renaissance spirit the grammatical and rhetorical characters ready at hand for purposes of analytical study Ancient Canons of literary criticism also revived and above all, the humanist spirit of the great writers of antiquity So whilst we may say the Renaissance, as a definite movement came to an end with the breaking-up of the ideal of a single world-language for the educated and along with the development of vernacular literatures, yet the Renaissance spirit was not thrown aside but rather absorbed by each nation Educationally, the humanist spirit of the Renaissance whilst it ascribes due weight to the significance to the world of a Dante a Shakespeare a Mazzini and a Goethe suggests that there are additions to rather than substitutes for the intellectual values revealed by the Renaissance as belonging to the classical authors of Greece and Rome

F W

RENAISSANCE IN FRANCE —(See BUDE)

RENAISSANCE IN THE LOW COUNTRIES —(See BRETHREN OF THE COMMON LIFE)

RENNES, THE UNIVERSITY OF —This is one of the institutions organized under Napoleon I in the early years of the nineteenth century At first it possessed only one faculty that of law but in 1820 a school of medicine was attached to the university and still later the faculties of literature and science were added The colleges of medicine and surgery at Rennes were of ancient origin and had long enjoyed a high reputation Attached to Rennes University is the School of Medicine and Pharmacy at Nantes

REPORTS —(See RECORDS AND REPORTS)

REPTON SCHOOL —Repton a Derbyshire village about 4½ miles from Burton on Trent was in early times the capital of Mercia A famous Augustinian priory was established there in 1172 and remained in existence until the Dissolution of Monasteries In 1557 Sir John Port of Etwall founded at Repton a grammar school which has since become one of the great public schools of England Part of the school buildings includes the remains of the priory Repton has upwards of 400 boys and 30 masters There are more than thirty entrance scholarships and exhibitions ranging in value from £80 to £10 per annum and several valuable leaving scholarships in all the endowment exceeds £2 000 a year The curriculum is classical modern and scientific and there are Army engineering and other special classes The school is famous for its prowess in the playing fields Among many distinguished and learned Old Reptonians are Sir John Edwin Sandys Public Orator at Cambridge and the late Canon Sanday Lady Margaret Professor at Oxford

RESEARCH AT THE BRITISH MUSEUM AND PUBLIC RECORD OFFICE, THE APPARATUS OF. —The present article is concerned with only that branch of systematic inquiry which we will call literary research

In the main the subject-matter of such research will be historical but there are certain subjects correlated—but in a sense preliminary—which claim prior notice The chief of these are legal, biographical and genealogical research In their

entirety, they find employment for an astonishing number of record workers record agents, transcribers and researchers

Legal Research. Legal research is the easiest class of investigation to undertake In spite of the professional terminology and verbiage of legal documents, there is no disputable principle or subject-matter of English law which a student cannot unravel for himself by the application of common sense sound judgment and assiduity and form as sound an opinion upon as any average lawyer Nine-tenths of the law administered in the English courts to day is case law and granted industry and acumen case law is an open book The key or index to it is afforded by a series of digests or encyclopaedias (John Mews *Digest of English Case Law* 16 vols Renton & Robertson *Encyclopaedia of the Laws of England,* 15 vols *Twentieth Century Statutes* 9 vols Earl of Halsbury *Laws of England* 28 vols, Chitty, *Statutes,* 16 vols, and Underhill *Encyclopaedia of Forms and Precedents* 17 vols) The plan of these works is an alphabetical arrangement of subject-matter and the quotation of cases under each head is copious and detailed Having derived the references from such a source any one can easily turn to the original cases themselves as given in the Reports With regard to these Reports it must be premised that they fall largely into two classes The first is a large gathering of miscellaneous reports made in the past by various independent lawyers or judges beginning with the Year Books and coming down to the modern series A good key to these reports is contained in a little hand list published by Sweet & Maxwell with the system of quotation employed in references to them The second class is of course, the modern officially recognized Reports of the various Courts—Privy Council Chancery King s Bench and so on These are accessible in the Reading room of the British Museum and, if the layman will by their means work through all the cases bearing upon any particular legal problem he will find to what fine points legal difficulties can be focused and how illuminating is the process of so focusing such difficulties But at the same time he will inevitably be struck by the almost hopeless conflict of pronounced opinion or judgment

Besides this question of research in the general principles of English case-law there is the more common branch of legal research that is reference to particular legal cases of bygone times In these the interest is purely personal the ascertainment of fact with regard to a person or as to the title to property and so forth This research can only be carried on at the Public Record Office and one of the two rooms which are there accessible to the public is devoted entirely to it The whole of the procedure of research under this head is highly technical All the four Courts (Chancery King's Bench Common Pleas and Exchequer) have and in the past have had still more different forms different methods and types of recording even different handwritings The various lists and indexes and calendars to this almost illimitable ocean of material are to be found only in the Legal Room itself They are too vast to be even summarized here An illuminating conspectus of them is contained in Scargill-Bird s *Guide to the Public Records,* under the heading of " Judicial Proceedings " It is only necessary to add that in order to conduct independent research in this domain it is necessary to be a palaeographer

Genealogical Research Biographical and genealogical research can be conveniently treated together, for they are in essence related A genealogist undertaking a particular research will inevitably begin with printed pedigrees The mass of such printed pedigrees is immense and there is a good index to them in Marshall s *Genealogist s Guide to Printed Pedigrees* In the main the bulk of such pedigrees is contained in various Heralds Visitations (many of which are printed in the publications of the Harleian Society, and of various county societies) and, secondly in independent collections of pedigrees drawn up and published by private compilers Practically every county of England can produce some or many of such compilations but as a rule a good county history will be found to embody the bulk of them

Where the printed pedigrees stop or fail the process of genealogical research becomes more arduous The many manuscript genealogies in the British Museum are accessible to all and by means of indexes are easy to work But the pedigrees at the Heralds' College are a sealed book (so far as they have remained unprinted) Research there is only allowed to be undertaken by the officers of the College and such research must be paid for After exhausting all these resources a researcher must perforce turn to parish registers for birth, marriage and death entries and to wills for actual statements and enumeration of children or other relationships Many parish registers have been printed some few of the London parish registers (of suppressed churches) are now housed in the Guildhall and the Nonconformist registers are housed at Somerset House But beyond these there are thousands of parish registers still unprinted and in the custody of incumbents, from whom permission must be obtained to consult the records In the case of wills it is necessary to know at what registry the wills of any particular locality had to be proved (this information is given in Sims s *Manual for the Genealogist*) and then a visit must be made to that registry and fees must be paid for access Finally a large, if miscellaneous amount of genealogical material is derivable from monumental inscriptions and tombstones

In all this specialized local work the researcher will generally find that local individuals or county societies literary historical record or antiquarian, or so forth have already worked up an astonishing amount of the ground and the shortest cut to such knowledge is almost invariably to turn to the proceedings of such societies and to a good county history

As to the miscellaneous genealogical material a good key to it is afforded by Anderson's *Guide to Heraldry and Genealogy*

Biographical Research Biography is a much more diffuse subject to handle than Genealogy Presuming that the genealogical side of any biographical subject has been elaborated as above, the most efficacious step to take is to resort at once to the general catalogue of the British Museum If by reason of not having written books or not having books written about him he does not appear in that catalogue then recourse must be had to the various general dictionaries of Biography A good key to the general dictionaries is given in L B Phillips's *Dictionary of Biographical Reference* For distinctively national subjects, recourse must be had to the distinctively national dictionaries (*Dictionary of National Biography,* for England, *Deutsch*

Allgemeine Biographie for Germany Wurzbach *Biographisches Lexikon d Kaiserth Oesterreich*, for Austria *Biographie Nationale de Belgique* for Belgium *Biographisch Woordenboek der Nederlanden* for Holland *Svenskt biografiskt Lexikon* for Sweden Bricka *Dansk biografisk Lexikon* for Denmark *Russky biograficheskiy slovar* for Russia and so on) Some of these dictionaries are unfortunately still incomplete but wherever notices are accessible full bibliographical references will be found appended and by working backwards and forwards through the authorities given further authorities and sources will always be found to suggest themselves and a full knowledge will gradually be built up All this means infinite patience and of course, access to a good library the British Museum Library above all

Historical Research at the British Museum But apart from those extraneous subjects of Genealogy and Biography it remains true that the main preoccupation of English students working at the British Museum or the Record Office will be English History in all its ramifications including literature Naturally such research falls into two wide classes dealing either with printed sources or with unprinted manuscript sources The first of these studies can be pursued at the British Museum the second can only be followed at the Record Office

PRINTED SOURCES Here it may be at once stated that the most useful help of all is still lacking viz a subject catalogue of the British Museum Library Such a catalogue is in course of preparation and when complete it will be a boon to the whole world of scholarship Watts's *Bibliotheca Britannica* gives a classification by subjects as well as by authors and it is indispensable But this book was published in 1824 and the entries in it are only classified down to about 1818 From that date to the commencement of Fortescue's quinquennial subject index of books added to the British Museum Library there is a deplorable gap of sixty years and nothing but a positive genius for research aided even by an element of luck will enable the researcher to cover this interim period The shortest way to proceed is to go straight to a guide or bibliography of bibliographies There are several such the most recent of course being the best W P Courtney *Register of National Bibliography* (1905) *Catalogus der Bibliographie* (Hague Koninklijke Bibliotheek 1903) G K Fortescue *List of Bibliographical Works* A G F Josephson *Bibliography of Bibliographies* (1901) L Vallée *Bibliographie des Bibliographies* (1887) J Sabin *Bibliography of Bibliography* (1877) From these works the student will find whether there is in existence any special bibliography of the particular subject which is engaging his attention whether it be theology literature economics art history or what not If he finds such a bibliography then the indication of sources or authorities will be abundant and his path will be easy If not the initial difficulty still remains and he will be obliged to isolate his period or his subject and use such general authorities as he starts with a knowledge of as his main inlet into the knowledge of further authorities following up each reference by calling for and actually handling the authority so given and noting further references therein and similarly again following these up By such means, it is possible to create one's own bibliographical knowledge of sources and in the main such knowledge will be good It will chiefly fail in the one great branch of publications (whether in form of treatises or of articles merely) by the various societies, and this difficulty can only be overcome by taking the list of learned societies (as in Lowndes, Vol XIII or the Year Book of Scientific and learned societies) and systematically going over all their publications For early English History pure and simple (*i e* constitutional diplomatic religious economic naval and military) good bibliographies —Gross and Hubert Hall—are now accessible and with Potthast (*Wegweiser durch die Geschichtswerke des Europäischen Mittelalters* 1896) we may say that the mediaeval period of European and English history is fairly well accounted for For the modern period good working lists of authorities will be found in the bibliographies appended to each separate article in the *Cambridge Modern History* and the *Cambridge Modern Literature*

Historical Research in the Public Record Office. Finally to turn to the second branch of investigation—that of unprinted sources of English History at the Record Office—it must be stated that the official classification of documents has no necessary relation to the contents or subject matter contained in those documents The classification is entirely based on the departmental provenance of documents Documents from the State Paper Office are State Papers Foreign and State Papers Domestic documents from the various Courts of Law are Judicial Proceedings (Chancery King's Bench Common Pleas Exchequer Courts of Wales and Chester Duchy of Lancaster Palatinate of Durham Palatinate of Lancaster Admiralty Court of Chivalry Ecclesiastical Courts Marshalsea Peveril Court Court of Requests Court of Star Chamber Court of Wards and Liveries) documents from the Colonial Office are Colonial Office Departmental records and include all the records of the various forms of the old Board of Trade and Plantations and so on and so on It would be tedious to continue such an enumeration So much is given simply to emphasize the guiding fact that the official classification is only a guide to character not to content of document Suppose for instance the student wished to work up at the Record Office the financial history of England The official classification would not help him beyond a certain point The 'receipts and issues of the Exchequer' will so to say give him the nation's bank or cash account the Revenue Rolls and Crown Lands will give him the purely hereditary Crown revenue and the Taxation class of records will give him the Parliamentary or other extraneous grants in aid form of revenue the Treasury Records will give him the account of the purely administrative or directive activity of the Treasury as a department But vast and untravelled as is this mighty sea of matter it still remains that an unknown quantity of material bearing on this subject of finance exists in other classes of material For instance the papers of such a Lord Treasurer as Burleigh under Elizabeth or Cecil or Middlesex under James I are State Papers but they deal with finance very largely and in effect in just the same directive or administrative way as the later strictly so-called Treasury Papers do And similarly when with the Revolution of 1688 we reach the modern constitutional system of annual estimates of income and expenditure the student would hunt in vain for this material under any class head of Record Office documents

This instance is given only as an illustration of the enormous difficulty attending any such research

Generally speaking, it may be said that whilst any and every researcher will meet with unfailing courtesy and the most expert guidance at the hands of any official in charge of the research rooms at the Record Office there will still be a heavy call made upon his own individual intelligence, and the more widely equipped he is with preparatory special knowledge the better will be his chances in the actual work of research

For reasons of space this article is devoted entirely to generalities It is impossible to make separate reference to the special guides indexes calendars (whether printed or unprinted) or other compilations which in the course of many years have been patiently elaborated and accumulated in both the British Museum (the Manuscript Room especially) and the Record Office A researcher finds these ready to his hand the moment he visits either of these great national treasuries and from the moment he begins to handle them they come to be literally his bread and butter the staff of his research life W A S

RESEARCH IN EDUCATION —(Education within the last few decades has come to be regarded as an applied science like medicine engineering or industrial chemistry) In each case the change in standpoint has been due almost entirely to the application of the methods of research to problems of everyday practice Training the mind requires a scientific study of the mind just as healing the body requires a scientific study of the body(For long the teacher like the earlier physician was guided by little else than historical tradition *a priori* speculation and personal common sense He now practises a technique almost as specialized as that of the modern surgeon or physician and that technique in turn rests upon a large body of knowledge almost as specialized as anatomy physiology or pathology)

(Teaching however consists in much more than mere applied psychology Starting with the application of psychological generalizations to the difficulties of the classroom(educational research has developed problems and methods of its own Indeed to education would now be conceded by almost universal consent the rank of a separate science applied —that is practical—in its nature but as independent and as self contained as engineering or medicine)

The methods of research are much the same in education as in other sciences observation and description of individual children questionnaires seeking *data* from large numbers experimental investigation of specific problems particularly by means of tests genetic studies of growing children pathological studies of abnormal children and statistical analysis of the *data* collected)

The problems which have formed the chief subjects for research fall under one or other of two main heads (1) the development and peculiarities of the individual minds to be educated (2) the best methods to be adopted in educating them The following are some of the more important of the results which have been yielded by the foregoing methods

Developments of Individuals. The most active line of inquiry has consisted in applying to large groups of children *tests* of mental capacity or educational attainments and calculating averages and standard deviations for each age The age-averages yield a general picture of the normal course of mental development in the particular ability tested, and the standard deviations indicate the normal range of individual differences 'Norms' have thus been obtained for the chief subjects of the school curriculum By the aid of such tests as those of Courtis and Ballard for arithmetic Starch and Ballard for reading Ayres and Buckingham for spelling Ayres and Thorndike for handwriting Thorndike and others for drawing Thorndike and Hillegas for composition the work of schools and school systems can now be measured with fair accuracy The majority of these studies have been carried out in America but similar experiments have been commenced in this country by the research committees of the Child Study Society and of the British Association The latter have already published typical results obtained with standardized arithmetic tests applied to children of both sexes, and of average superior and inferior social status

Similar researches have been carried out by means of tests in general intelligence for example, by the Binet and Simon scale (*q v*) Manuals of mental tests give detailed instructions for examining other elementary psychological *data*—sense perception mental capacity attention memory association imagination suggestibility and so forth Results stated however have been mainly obtained from American children

STATISTICAL CONCEPTS such as that of correlation and the normal curve have proved readily applicable to results obtained with such tests as the foregoing and their application has suggested various fruitful generalizations Two important conclusions have been drawn which have already begun to influence educational administration—

1 Mental and educational abilities appear to conform approximately to normal distribution that is to say grades of ability near the average are the most frequent grades somewhat above or below the average are nearly as common grades deviating considerably from the average are correspondingly rare and there are very roughly about as many individuals belonging to the grades above the averages as to the grades below This principle has been of considerable value in securing and testing uniformity in examinations conducted on a large scale and promises to lead to great improvement in systems of marking On this assumption it becomes possible in dealing with large numbers to predict the approximate number of children falling within or beyond the specific limits of ability with the same ease as we can foretell the ultimate proportions of heads in tossing coins or the scattering of shots fired from a gun

2 Mental performances appear to be the result of two kinds of capacities first a general factor common to all intellectual activities secondly specific factors limited to certain activities or groups of activities only This to some extent justifies the current choice of subjects for scholarship examinations school promotion and school classification Composition and problem arithmetic the subjects most commonly selected for such tests apparently correlate very highly with the general ability underlying all school work At the same time however it is evident that examinations for specific purposes should themselves be made more specific Tests for trade schools art schools particular occupations and particular trade processes should involve performances as nearly as possible identical with the work the candidates will subsequently be required to undertake It is clear,

too that children may be defective not only in general intelligence as is assumed by statutes relating to the mentally deficient but also in particular or localized functions as is shown by the occurrence of colour blindness word-blindness number defect and motor inco ordination in children otherwise normal

The method of CONTROL-GROUPS has been no less fruitful The improvement resulting from teaching a sample group of children by some new educational method can be compared with the improvement shown by an equivalent paired group left to the ordinary educational routine Such experiments have demonstrated for example that the practice acquired by exercise in one particular subject matter affects ability to deal with other subjects to a very limited extent and under very special conditions 'Transfer of training is the exception rather than the rule

Problems of the Future Researches have also been carried out upon the teaching methods most suitable for each subject of the school curriculum Which method for example is the most effective in the teaching of reading or spelling—analytic synthetic alphabetic phonic or phonetic? Is the method which proves most effective with the average child equally effective with the super normal or the backward? What are the most effective methods of teaching arithmetic spelling writing drawing and so forth? What are the particular psychological functions which enter into these several branches of school work and how may they best be trained? Such problems are of obvious importance to the practical teacher (Results hitherto obtained in the chief investigations will be found under the heading of the various subjects of the school curriculum)

A few investigations have been carried out upon the general technique and hygiene of mental work What is the most economical method of learning? What are the fatigue effects of the several school subjects? How may effort and rest be best distributed so as to obtain a maximum result within a minimum time? Such problems have been answered tentatively by psychological investigators But the conclusions are based more upon experiments with adults under laboratory conditions than upon experiments with children in the classroom under ordinary school conditions (See FATIGUE and MEMORY) C BURT

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RESEARCH, THE ENDOWMENT OF—Endowment of research work is a matter concerning which much has been written and said but little done In the past under the influence of the powerful classical tradition of education scientific research has met with but scanty assistance where it has not been contemptuously shown the door when pleading for help It is of course in connection with scientific work that the question is most acute, since literary research and even exploration work are of a less costly character

That we have neglected to provide for research, even in matters vital to the country is undoubted, and, as one example may be quoted the figures given as to investigations into aviation by Lord Montagu of Beaulieu, who has pointed out that, whilst Germany in the year before the war, spent £7 000 000 on researches of this character, the British Empire in the same period spent £500 000 Further he tells us that a great American company in 1916 employed over 200 researchers in connection with a certain very important problem in aviation, at which at the same time only four or five persons were engaged at our own Admiralty

Politicians have never grasped the fact that research in scientific matters may be of enormous even vital importance to a nation whether in times of peace or in those of war As to the latter we have had examples enough and to spare during the past few years and of the former those who are acquainted with the recent history of chemistry will hardly need to be reminded of the story of the aniline dyes

Existing Scholarships The standard of such encouragement as has been given to research may be said to have been set by what are known as the 1851 Exhibition Scholarships these having been founded out of the surplus funds of that undertaking These scholarships of which there are a number are each of the value of £150 per annum and are tenable for two or three years

They are awarded by the Commissioners of the Exhibition on the nomination of universities and colleges and in the past have generally been held at some foreign place of learning At the end of his three years the holder has to shift for himself If one examines the list of funds for post graduate and higher work as detailed in the *Year Book of British Universities* it will be evident that at present and with one exception yet to be mentioned the scholarships in question are the model and even the high water mark of provision for scientific research

There is a certain amount of provision in the shape of fellowships at the older universities and post graduate studentships at some of the newer which may at times be utilized for research purposes, but must be ruled out of the present inquiry since it is not ear-marked for that purpose but may be and often is used with quite other objects in view (*e g* as study for the Bar or for the Indian Civil Service)

As to the actual provision for the endowment of research whether in pure or applied science the amounts available even at the wealthier universities are but small several stating that about £2 000 per annum is available for this purpose Sometimes the funds are tied up to a certain branch of study like the Aubrey Bowen scholarships at Birmingham or the agricultural scholarships offered by some colleges but whatever they are their emoluments are exceedingly modest and their tenure is brief There is one exception which points the way to quite a different state of things and that is the Sorby Scholarship at Sheffield University This scholarship is worth about £500 per annum, and is tenable for five years with the possibility of re-appointment The selection of the scholar who must work in the Sheffield University laboratories is in the hands of a committee appointed by the Royal Society, and the present holder is engaged on a research into the whole question of the Yorkshire coalfield Here, at least is a scholarship which enables its holder to settle down to a long and serious piece of work with

the tolerable certainty that, when completed, he will be so complete a specialist in some direction as to feel fairly safe of securing permanent employment

The idea is wholly different from that of the other scholarships which suggest a single piece of work by a young researcher necessarily limited by time to a brief inquiry What is to become of him when it is finished is a question with which the scholarship givers perhaps very naturally have not concerned themselves Yet it is a very real question for up to the present save so far as munition work during the Great War necessitated it there has been but little prospect for the trained researcher, as a researcher He has had to look out for a demonstratorship or if sufficiently fortunate for a professorship where the major part of his time will be taken up with teaching In Germany on the other hand there were abundant openings for researchers places like the Badische Aniline Fabrik for example maintaining a very large staff of skilled chemical researchers purely for purposes of research It is to be hoped that manufacturers in this country will soon have learnt their lesson and will employ researchers on a similar scale If we are to sum up matters as they are to day we shall find ourselves obliged to admit that the provision for encouraging research is hopelessly small and inadequate, and that the reason for this is to be found in the fact that the public even the educated public has never yet appreciated the importance of encouraging science This want of appreciation would seem to be largely due to the almost exclusively classical education which has fallen in the past to the lot of those who have frequented the public schools and universities

Difficulties of Research Endowment So much must be admitted yet in common fairness it must also be said that the question of the administration of such endowments as would generously aid research bristles with difficulties Nobody wants to endow researchers of the type of Humphrey & Cornelius Jagenal of *The Golden Butterfly* nor to set persons on the path which leads to that state of degradation This is a danger which has to be guarded against but there is another not less fatal and that is the tendency to pull up the plant in order to see how the roots are growing in other words to tease the researcher for results before they are ready It is believed that such a policy has in the past been known to lead to a premature and unfortunate exposition of incomplete observations and it is quite likely to do so Such supervision as must necessarily be given must be exercised by persons themselves expert in research, who know how many blind alleys, especially in physical and chemical researches may have to be entered explored and abandoned before the real path of inquiry is found

In certain cases no doubt, the complete maintenance of a man and a laboratory and by a man is meant a director with his staff is obviously the ideal thing, such a state of things as we find in connection with the National Physical Laboratory or the Observatory Such things are in existence, but all too few But a large part of the research of the country will still be carried out, and, for the benefit of all, should be carried out in the scientific laboratories of the various universities and institutions of university standing throughout the country It is no doubt possible to find excellent teachers who have not the gift of research, just as it is possible to find researchers who cannot teach, but the ideal thing is the combination of the two gifts

And this may be said that the teacher who does not devote some of his time to research certainly fails to keep up that freshness in his teaching which his researching brother will have But the professor s time is often largely taken up by routine work capable of discharge by a younger and less experienced man There can be no doubt that the provision of such a man *not* purely as a research assistant but as an ordinary demonstrator is one of the very best ways in which research can be assisted Then there is the provision of apparatus and material Any one who studies the description of the Ether-machine given by Sir Oliver Lodge (who got the money for his from a wealthy Liverpool merchant), will understand that even the wealthiest university would quail before the provision of such a costly implement for a single experiment This question of expense for materials is of prime importance It is one which can only be faced by those having control of the public purse It never yet has been faced by them Let us hope that the indications now apparent that it is being faced will prove to be correct

B C A WINDLE

RESIDENTIAL TRAINING COLLEGES —Elementary education until the nineteenth century was mainly the voluntary work of religious bodies predominantly of the Church of England The State organization of elementary education dates from the Factory Act of 1802, which aimed at 'the preservation of the health and morals of women and children employed in cotton and other mills This first interference of the State led by degrees to the whole series of Acts which made elementary education compulsory in 1870 and in 1891 free The education of the child led of necessity to the provision of qualified teachers This again, was in its origin the achievement of voluntary effort In 1839 however the Committee of Council for Education was appointed, and formulated two proposals (1) The establishment of a great training college for teachers (2) the inspection of schools But though the proposals were passed in the House of Commons by a majority of two votes the opposition aroused by the scheme was so bitter that the Committee recommended postponement of action "until greater concurrence of opinion should prevail"

The First Experiment It was at this crisis of apparent failure that Dr Kay—afterwards Sir James Kay Shuttleworth—the founder, as Matthew Arnold calls him, of the Council of Education then determined to do on his own account what the State had failed to achieve In 1839 he secured from Sir John Shaw-Lefevre, the Speaker, the lease of the old Queen Anne mansion at Battersea, called Terrace House and, calling on the Vicar, Robert Eden, the future Bishop of Bath and Wells he "gave him his solemn benediction as chaplain of the first training college in England" In January, 1840, Dr Kay, with his mother sister and two brothers took up his residence (with William Horne as first tutor), and in February the first students, eight in number, were transferred from the School of Industry at Norwood to be trained as schoolmasters receiving three years' instruction in the training school and getting practical work as pupil-teachers, for two years at least, in the Battersea village school during three hours of every day

Their number was gradually increased to twenty four during the first year the students being drawn from various schools a few young men were also admitted on the recommendation of personal friends or to be trained for special schools

The experiment proved instantly successful within two years the Government recognized its value by contributing £1 000 to the expenses which had so far come out of the pockets of the founder and the friends of the movement and decided to encourage the building of more colleges by offering grants for the purpose

Growth of the Movement Queen's Scholarships In 1846 the training of teachers was further encouraged by the institution of Queen s Scholarships tenable at a training college for three years the payment depending upon the successful passing of an examination at the end of each year The balance of the cost of maintenance and training was made up by fees and voluntary subscriptions In this work the National Society on behalf of the Church and the British and Foreign School Society on behalf of the undenominationalists took the leading part The Roman Catholics the Wesleyans and others now joined in the movement and by 1851 twenty five colleges had been established in different parts of the kingdom

In 1862 Lowe s Code based on payment by results was introduced and by its niggardly and unfair methods seriously threatened the existence of the colleges Under this Code the Queen s Scholarship was given for two years only and the money was not to be paid to the college until the student had not only completed his training but proved his efficiency by securing his parchment certificate after probation in a school Further the Government grant was never to exceed 75 per cent of the expenses of the college up to £50 per head and was paid only if the college raised by voluntary contributions 25 per cent The unfairness of this arrangement is easily seen A pupil teacher having passed his qualifying examination for a Queen s Scholarship is accepted as a student at a training college he is there lodged boarded and trained for two years he passes his leaving examination enters on his work in school and at the end of eighteen months or two years if his powers as a teacher are adjudged satisfactory obtains his parchment certificate and then and not till then his scholarship of £50 a year for two years or £100 in all is paid to the College If in the meantime he should be disabled by illness or accident the payment is postponed and should he prove incompetent or die before earning his parchment the College although it had housed lodged and trained him for two years would receive nothing at all

In spite of this ungenerous treatment the colleges continued to prosper and increase in number In 1890 day training colleges were established on an undenominational basis and to meet a complaint of inadequate accommodation for Nonconformist students in the residential colleges hostels for such students were opened by some of the Church colleges

In 1900 St Gabriel s College Camberwell for Church of England women students was built thanks to private generosity spécial provision was made for the accommodation in a hostel of Nonconformist students equal in number to the Church women accommodated in the college care being taken that all should share equally in the social and intellectual life of the college No building grants had been given for many years the enormous additions and improvements made in the residential colleges at the cost of several hundreds of thousands of pounds were entirely the result of voluntary effort

Local Education Authorities' Colleges By the Act of 1902 local education authorities were established which encouraged by the generous building grants (amounting to 75 per cent of the approved cost) offered by the State to them and to them alone began to build local colleges Unfortunately no regard was paid to the question of supply and demand and the market was flooded with trained teachers who found great difficulty in securing appointments This combined with other causes such as the practical abolition of the pupil-teacher system the breakdown of the student-teacher system designed to take its place and the attraction of other openings has led to a grave falling off in the number of candidates for training and threatens a shortage in the supply of teachers In the period in which training college accommodation was doubled the supply of candidates for training was practically halved

The Need of a National System of Education There is an increasing demand for a national system of education No system can claim this title which fails to recognize that there are many kinds of people in a state and that many and various forms religious and social have contributed and should contribute to education It would be statesmanlike therefore to use these forces and to maintain and develop in the training colleges the old pandenominational rather than the modern undenominational policy and to regulate accommodation by a careful estimate of the needs of the schools Such a policy would secure the active co operation of the various religious and educational bodies which have done such magnificent pioneer work in the training of teachers would prevent waste in unnecessary competition and would go far to ensure a steady supply of candidates certain of employment on leaving college

Problems of Supply There are signs already of a return in a modified form to the pupil teacher system which in the past provided from the villages and small towns many of the best teachers in the profession The difficulties in securing a supply arise very largely from the interval between the school leaving age and entrance into college It is generally felt that 18 is the age that marks the difference between school and college life and though under the present regulations bursars may be admitted at 17 the admixture of such students is regarded by many as inadvisable both in their own interests and in those of the college as a whole

For this and other reasons an amalgamation of the old pupil teacher system with the new bursar-student teacher system seems to offer a solution If probationary scholarships for intending teachers were offered to promising children on leaving the elementary school tenable at approved secondary schools for three years and if at a very early stage visits of observation to and a little later short periods of practice in the elementary schools were arranged as an essential part of the course there is little doubt that a supply would be forthcoming and much of the present wastage prevented A capable head master or mistress would be able to decide as to the likelihood of the candidate s development as a teacher and the unsuitable would be weeded out without delay

Under present arrangements a bursar gets no teaching practice in his bursar year and in many cases very little in his student teacher year, he then enters college for two years and should he prove unsuitable has after three or four years delay either to face beginning the world over again in a new capacity or to struggle on as a teacher in work uncongenial to himself and unprofitable to the children

Curricula and Aims of Training Colleges Sweeping changes have taken place in the curricula of the colleges since 1840 The first students were taught to do everything for themselves They rose at 5 30 a m divided up all the domestic duties amongst themselves except the cooking looked after the garden tended the animals milked the cows and thoroughly earned the breakfast waiting for them at 8 30 after short morning prayers 9–12 instruction 12–1 garden duties in which tutors and students worked side by side 1–2 dinner 2–5 instruction 5–6 garden again 6 15 a frugal supper 7 drill 8–9 copying up notes of day s work sometimes diversified by reading aloud or singing 9 evening prayers and to bed at 9 20 after a strenuous day The syllabus of instruction was simple English arithmetic history and geography drawing and music From the first the responsibility and sacred nature of the work for which they were being trained were earnestly impressed upon the students and the formation of character has been throughout the chief aim of the residential colleges

What may be called the basal subjects remain the same to-day but with the gradual recognition of a science of education pedagogy has received increasing attention while physical training involving a simple knowledge of hygiene has rightly been made a subject of the first importance

The subjects of the training college course fall into two divisions and at one time were for examination purposes divided into two parts—Part I embracing what may be called the professional subjects the principles and practice of teaching music drawing physical training and hygiene Part II embracing subjects of general education English history geography mathematics science and languages from which with the exception of English (rightly obligatory) a selection may be made

At the end of the course normally two years an examination is held by the Board of Education and the names of the students who pass are published in an alphabetical list with marks of distinction against the names of those who show special aptitude in various subjects The old method of a yearly examination by the Board and a classified list in order of merit has been abandoned

As an alternative to what may for convenience be referred to as Part II subjects students who have matriculated before entrance into college and have included in their examination a pass in history and geography are allowed to go on with university work and offer the Intermediate (or Final) stage of the Degree course

In some of the colleges this opportunity has been widely used with considerable success but, in view of the short course and the large amount of time and energy required for the more strictly professional subjects it is clear that degree work should be attempted only by students who have had good previous instruction and are well forward in their subjects

The Life of the Residential College The life of the residential colleges is distinguished by strong *esprit de corps* athletic pursuits flourish among both men and women students musical literary and debating societies are well supported and in a large number of the men s colleges excellent work has been done for many years in connection with Volunteer and Territorial Corps

A problem which calls for careful and sympathetic treatment is the relation of the training colleges to the universities Oxford and Cambridge have had for some years day training departments and many of the provincial universities (*e g* Manchester Liverpool Leeds and Sheffield) have endeavoured to develop training alongside the university course (See articles on etc etc) The relation of London University to the Metropolitan training colleges however calls for a special lead London has now a Day Training College recognized by the University for internal students, but unfortunately this arrangement does not so far affect and influence the ordinary residential training college There are admittedly great difficulties The normal training course is for two years only, only a few students are able to afford and qualify for a third year course in which the degree may be obtained At the same time the intellectual material is good many students figure with credit in the external lists of the University, while the very real corporate being of these colleges with their social and athletic life would be a valuable asset to the University It is devoutly to be wished that the University authorities may yet devise some scheme which, without prejudice to the internal students, may give the stimulus of some form of recognition to these institutions which are exercising through the elementary schools such a powerful influence on the education and outlook of the country H W D

RESPIRATION IN RELATION TO HEARING, THE HYGIENE OF —The hygiene of the respiratory passages is closely bound up with that of the ear The Eustachian tube, which connects the tympanum and the naso pharynx serves as an exit for the secretions of the middle ear and by opening during the act of swallowing maintains equilibrium of pressure between the air in that cavity and the external ear Obstruction of this passage dulls the hearing and may produce disease of the ear for by preventing drainage of the cavity which becomes filled by exudation, it provides a home for any bacteria which may migrate from the throat This may lead to perforation of the tympanic membrane and even to disease of the mastoid process or of the brain itself

Stoppage of the Eustachian tube is chiefly caused by trouble in the respiratory passages Inflammation of the nose or naso pharynx may spread directly to the tympanic cavity through continuity of structure Obstruction of the nostrils, which may be caused by a cold in the head, polypi, adenoids, etc mechanically closes the Eustachian tube As obstruction of the nostrils leads to mouth breathing and children naturally breathe through the nose, it is important that all cases of mouth-breathing should receive prompt attention Physical drill and breathing exercises frequently produce beneficial results when the trouble is not very serious S D

RESPONSIONS (Oxford University) —An examination held four times a year which can be taken by any one who intends to enter the University

For those who intend to read for Honours it is a great advantage to pass this examination before matriculating so as to leave the way clear for more serious studies The subjects are Arithmetic Euclid or algebra, Greek and Latin grammar and translation with Latin prose composition Various other public examinations are accepted as substitutes for responsions and a pass in responsions generally excuses a student from college entrance examinations Fee two guineas

RESTLESS (INQUIETI), THE ACADEMY OF THE —(See BOLOGNA THE ROYAL ACADEMY OF SCIENCE OF THE INSTITUTE OF)

RESURRECTION, COMMUNITY OF THE —(See CLERGY, TRAINING OF)

RETARDATION —In every class there are a few pupils who are appreciably older than the rest, without being any more advanced in their studies Their backwardness may be due to many causes *e g* to entering school late to irregular attendance to slight mental deficiency or to individual difficulties in the school curriculum The most common and the most important of all these causes is lack of general intelligence

The grouping of children according to mental age as distinct from chronological age is of the utmost importance for efficient teaching It is commonly effected with moderate success on the basis of scholastic attainments but a better method is desirable The advantages that would accrue from the use of a method of determining the stage of mental development of a pupil which is independent of school training are obvious and far reaching It would in the minimum of time give an abstract measure independent of personal bias and personal training a teacher s estimate is usually based on scholastic attainments which are dependent on will character attention a certain docility and many other conditions besides general intelligence It would give a method of comparing individuals living in different environment and show objectively what a child is really capable of doing and would thus make it possible to distinguish between feeble mindedness and backwardness

Great hope has been entertained in this direction from the use of the so called " mental tests ' —tests of sensory discrimination association memory attention reasoning etc but no one of these has proved entirely satisfactory Fairly good results have however been given by colligating the results of several of these tests

The most promising set of tests that has yet been suggested is that of Binet (*q v*) These tests rest on the assumption that children at different stages of mental development will pick up information of certain kinds Their success depends on their general nature and they are obviously ineffective if children be specially " coached for them It has been objected that they do to some extent test scholastic attainment and the effect of environment, but this is not a vital objection for these are in a great measure themselves determined by the child's natural ability

The treatment of retarded children is a difficult problem If the retardation be slight they can, with advantage to themselves and without harm to others, be taught with younger children but it is generally admitted that children three or more years behind the average should be taught in special classes S D

RETENTION.—(See MEMORY)

RETRACTOR —(See PERSPECTIVE THE TEACHING OF)

REUCHLIN, JOHANN (1455–1521) —One of the first Hebrew scholars of the Reformation, was born at Pforzheim His singing led to his being sent to be educated at Paris where he studied Latin and Greek under Hieronymus of Sparta In 1474 he commenced to teach these languages at Basel employing methods of his own which were simpler than those current He then studied law at Orleans and Poitiers took the highest degree and afterwards practised as a lawyer at Tubingen He travelled in Italy made the acquaintance of many learned men from the East and was attracted to the study of Hebrew receiving help from Jewish scholars He was forced to take part in public business for many years but still pursued his philological studies In 1509 Pfeffercorn, an apostate Jew of Cologne aided by bigoted monks who opposed the new learning had obtained from the Emperor Maximilian a decree that all Jewish books hostile to Christianity should be destroyed, and endeavoured to persuade the emperor to include all Jewish books of every kind Reuchlin was appealed to by Maximilian and opposed the suggestion thereby drawing upon himself the hatred and hostility of the Dominicans He wrote several pamphlets in defence of his views on the preservation of Hebrew literature Reuchlin fought for liberty of study and thought and was a powerful instrument on the side of the reformers He gave new facilities for the study of Greek and Hebrew and as a scholar had a great share in the revival of classical literature and the awakening of the German mind He wrote a Hebrew Lexicon and *De Arte Cabbalistica* (a science which he had learnt from Picus Mirandola) *Rudimenta Hebraica*, and other works

REWARDS AND PRIZES —A reward does not necessarily involve competition with others a prize always involves competition A reward of some kind is the result of every effort of every individual Rewards then are open to all and apart from co-operation in achievement are attainable by all irrespectively of the efforts of others in the same field Whether they accrue as the material results of completed manual effort or as spiritual elation following the accomplishment of duty they are universal and natural They are thus a reliable stimulus to individual effort and in the world of education rewards in this sense form the bedrock of progress The teacher who recognizes this plans his pupils work so as to secure at each step a result which gives them the greatest possible satisfaction Success follows inevitably Why ? The teacher has achieved the main purpose of the real educator He has secured continuity of effort based on pleasure derived from the success of previous effort

Prizes are in a different category They are, at best medicinal—mere artificial stimulants Unfortunately frail humanity seems to need the physic but its use is not altogether without risk Prizes especially when valuable, divert interest Joy in the work for its own sake is diminished, for interest tends to centre on the prize This danger seems inseparable from any prize system, and the teacher can only hope for the day when good work

shall carry with it "its own exceeding great reward" Meanwhile, the educator must try to use the "prize" so that its stimulus may create a real interest and delight in the work itself among as many of his pupils as possible For this prizes must be more numerous than valuable and the award must depend on standard of attainment rather than on comparative excellence Prizes of great intrinsic value are necessarily few and the struggle to obtain them is often accompanied by great mental strain and sometimes by the development of very undesirable human characteristics This great defect is that as a stimulus to effort they affect a very limited number The great bulk of the children or students recognize themselves as out of the running from the first School should as far as possible reflect the conditions of early adult life affecting such problems as these how to obtain recognition as an expert manual worker how to win certificates of proficiency in special work how to get a university degree or a professional diploma in each of these cases the prize—for such it is—is open to all who reach a prescribed standard

School prizes should be open in the same manner The cost would be too great? The cost depends entirely upon the nature of the prize Prize money need not always be spent on books etc It might go to provide certificates of proficiency exhibitions of work that has reached the standard badges or school treats in short it might be spent for the special encouragement and distinction of children who have reached a definite standard of proficiency in any branch of school activity Excellence of work would then be presented more effectively as the great end in view and there would exist a greater possibility that in the struggle for efficiency the great educational ideal a delight in the work itself, would eventuate W D B

RHETORIC—As one of the seven liberal arts (*q v*) rhetoric has held a far higher place in education in the past than it holds to day It deals in the technical sense with the rules whereby one person may in speech or in writing effectively persuade another to an opinion or an action More generally its meaning is extended to composition of all kinds in which the mode of expression is suited to the subject matter The specially practical side of this training was shown by the Romans The *bonus orator* and the *bonus vir* are identified (See QUINTILIAN) The aim is not to produce a demagogue or even the professional lawyer but "the man who thinks the best things and expresses them in the best way" Yet as logic provided the formal standards for right thinking, it is to rhetoric the student looked to find the formal standard and rules whereby the logical thinker might give expression to his logically conceived ideas so as to persuade others to accept them and to *act* upon them in the strength of their truth In other words the "art" of rhetoric supplied guidance for methods of persuasion but its aim as with every art originally was practical The "art" of cookery was to produce good, wholesome, and satisfactory food, that of architecture, to devise good houses or other buildings Theories grew up to explain and rationalize the processes underlying these practical arts and often the theory was eventually studied apart from the exercise of practical art Thus geometry was a "measuring art" in the first instance, but frequently geometry has been studied as a theoretical subject purely In the same way, rhetoric developed its theory, and the thing became an object of study quite removed from the idea of private and public effectiveness and persuasiveness in civil life But, just as the application of history, of logic, will only secure in itself formal truth (*i e* truth as to the value of the processes of the arguments employed), and not necessarily attain material truth (*i e* the truth with regard to the subject-matter which is being studied) so rhetoric can describe the processes, the machinery of eloquence, but on its formal side cannot guarantee or even investigate the value of the subject matter about which the eloquence is employed

Aristotle Aristotle's treatise may be regarded as the organizing of all previous knowledge on the subject His *Rhetoric* is in three books The first book shows the usefulness of rhetoric, especially in maintaining truth and justice against their opposites in accustoming us to consider both sides of a question and as a means of self defence Book II regards the means whereby one person can in speech affect many at a time involving (to use a modern phrase) the psychology of the crowd Book III deals with the various ways of arranging and presenting subject matter in a speech or composition

Cicero By the time of Cicero, rhetoric had become the centre of instruction His *de Oratore* (55 B C) established the division of formal rhetoric in the five topics or subjects (1) invention (2) disposition (3) elocution, (4) memory, (5) delivery By "invention" was meant the actual collection of all the subject-matter to be dealt with in the oration By "disposition" was meant the particular and effective arrangement of the material collected When this process is achieved we have the "composition" 'Elocution' is the total effort by the method of arranging the material in other words the style of the oration whereby the orator proves his thesis pleases the listener and finally moves him to conviction The 'delivery" is closely connected with elocution and involves sound pronunciation, control and appropriate inflexion of the voice and rightful rhythm

Other Ancient Authors Dionysius of Halicarnassus (fl *c* 10 B C) besides his treatise on rhetoric Περὶ συνθέσεως ὀνομάτων (*i e The Composition of Words*) lays his special emphasis on literary, rather than oral composition He becomes, thus the first great exponent of the art of literary criticism The transition from critical analysis of literary effectiveness to the pedagogic attitude of the teaching of rhetoric is illustrated in Quintilian's *de Institutione Oratoria* (See QUINTILIAN) Whilst this book may be described as a "book on education" it is so because the really best type of education was assumed to be that of the orator It deals with the technique of rhetoric Thus in detail Quintilian examines the exordium or beginning of an oration the collection of subject matter proof of the thesis proposed the peroration or end and an analysis of the subject treated He devotes two books (out of the twelve) to the exposition of style Another book discusses the reading of authors, imitation, translation, paraphrase, declamation dialogue He also deals with *extempore* speaking, and the problems of memory and delivery Quintilian realizes that the speaker is greater than his speech, and devotes his Book XII to an account of the personal qualities and worth of the orator which so he says, emerge in his orations from his personality

Rhetoric in the Middle Ages The main current of

rhetoric was, throughout the Middle Ages Aristotelian in source It was propagated by the text books of Martianus Capella, Boethius, Isidore of Seville and the various encyclopaedias and hand books of the Seven Liberal Arts But the main subject of the Middle Ages for educational purposes was essentially logic, and of rhetoric, substantially only the formalistic parts were taught

Revival of Rhetoric with the Renaissance It is with the Renaissance of the fifteenth and sixteenth centuries that we come to the Revival of Rhetoric The sort of rhetoric for which the Renaissance made its demand, though still derived from Aristotle and Quintilian and still formalistic became the basis of the general art of criticism affording rules and standards for the discussion and evaluation of classical and other writers In this sense we may say that the change from Mediaeval to Renaissance times is marked by the transference of paramount stress, from logic to rhetoric, as a subject In fact we find the great scholars of the Renaissance almost indifferently called rhetoricians or *humanists* The literary and even the moral aspects of rhetoric were well understood Thus the view of Vives (1492–1540) is as distinctively practical as that of Quintilian himself Vives says 'The aim of rhetoric is not directed to the use of words so as to produce a pleasant style of composition but to put the whole matter shortly we should speak so that it may be made clear that this most *powerful of arts is a part of practical wisdom* He maintains that all argument must be devoted to the elucidation of truth

This practical side of rhetoric is emphasized still further by Erasmus in his *de Copia* (*c* 1514) In teaching work he suggests the gathering together of large numbers of examples of alternative phrases and variations of expressions synonyms and so on He gives a large number of illustrations of his own gatherings but the essence of his advice consists in the recommendation to the pupil to do the like for himself (*i e* to keep a note book always by him and add in the reading of authors to his collection phrases and expressions properly tabulated and indexed likely to be useful in composition) Significantly Erasmus says There is no branch of learning out of relation to rhetoric You can enrich an oration from every branch of knowledge (*e g* from mathematics and physics) He pleaded for brevity on the one hand but the brevity which is consistent with leaving in all that should be said and also for the copiousness so long as it excluded *rerum indigesta turba* It became one of the most important text books of the sixteenth and seventeenth centuries Rhetoric at any rate in England therefore came to be regarded as the theory of the processes whereby subject matter could be collected and utilized for composition purposes It had regard to the material as well as the form of composition Both Vives and Erasmus were practical rhetoricians The aim was as with Quintilian to produce the equipment of the *bonus orator*, so as to make him *bonus vir* How literally this was interpreted is seen in the phrase of Laurence Humfrey—one of the most puritanic of writers—when he seriously recommends 'of orators Isocrates Demosthenes and *the most reverend author and orator Christ Jesus (with the Apostles), whose writings I allow ever first and last*

The importance of rhetoric in the best Renaissance schools will be manifest when we remember that the *speaking* of Latin was a main aim of the schools and rhetoric, as we have seen was also in its earlier history, mainly concerned with the spoken language The comparative estimation in which rhetoric was held in Elizabeth's time may be judged by the fact that Sir Thomas Gresham (*q v*), by his will 1575 provided lectures in Divinity, Astronomy, Music Geometry Law, Physic and Rhetoric The number of subjects named is seven as it had been in the Seven Liberal Arts (Grammar Logic Rhetoric Music Arithmetic Geometry, Astronomy) The new inclusions are Divinity Law Physic The retentions are Astronomy Music, Geometry and Rhetoric Grammar Logic and Arithmetic This must be taken as the view of an essentially "practical' man

Sixteenth Century Text-books In the sixteenth century the school text book for rhetoric was that of Audomarus Talaeus and in 1612 John Brinsley, in the *Ludus Literarius* or *The Grammar School* says of it, that it is the most used in the best schools It was published in 1547 Ramus in editing Talaeus in 1579 claims that it includes the substance of Aristotle Isocrates Cicero and Quintilian expounded by Talaeus and supplemented by Ramus Ramus however is the advocate of few precepts and constant practice "If rhetoric should be thus taught and practised it would show as many orators as to day we see grammarians Ramus insisted on the pupil s own analysis of authors whom he read and like Erasmus he required the collection of illustrations of all kinds of tropes and figures from authors themselves

Another text book written by an Englishman though in Latin viz Charles Butler s *Rhetorica* (Oxford 1600) cites many examples of rhetorical figures of speech from classical authors and includes at least one passage to illustrate rhythm from Edmund Spenser s *Faerie Queene* This is interesting as an origin in the study of the English language Charles Hoole's *New Discovery of the Old Art of Teaching School* (1660) gives the best account of seventeenth century teaching of rhetoric, the century in which the subject received most attention in English schools

We find that not only is emphasis laid on the correct composition of orations by rhetorical rules but the writers of rhetoric require teachers to train pupils to be exact in pronunciation and accent and also to practise the right gestures along with due modulations of the voice whilst the teacher was expected by writers like Brinsley and Hoole to be a practised orator Such educational discipline even if only partially effective presents a dramatic aim which must have had its value in the appreciation of the Elizabethan and Stuart drama

Rhetoric and Literature Apart from the pedagogic point of view of rhetoric teaching indirectly the development of the rhetoric books throws light on the progress of literary appreciation in widening circles of the community Thus the rhetoric text-books published in English show the continuity and development of the study of English literature as it existed in Tudor times In 1524 Leonard Cox wrote his *Art or Craft of Rhetoric* in English but with examples chiefly taken from Roman history He was followed in 1553 by Thomas Wilson, who wrote *The Arte of Rhetorique* Wilson gave the lead to the adaptation of rhetorical rules to English writing as well as to Latin authors He protested against stilted Latinizing against the "strange unknown terms" of French and Italian then introduced into English In 1555 Richard Sherry, in his

Figures of Grammar and Rhetoric applied the rules of rhetoric to the interpretation and exposition of the Scriptures, and he was followed by Dudley Fenner in 1584 whose illustrations are entirely taken from the Bible So John Barton in 1634 Thomas Hall in 1654 John Smith in 1657 devoted their *Rhetorics* to the elucidation of Scripture Thomas Hall was a Puritan clergyman and school master at King s Norton his book was entitled " *Centuria Sacra* About one hundred rules for the expounding and clearer understanding of the Holy Scriptures To which are added a Synopsis or Compendium of all the most materiall Tropes and Figures contained in the Scriptures

John Prideaux Rector of Exeter College Regius Professor of Divinity in Oxford and afterwards Bishop of Worcester wrote in 1659 *Sacred Eloquence or The Art of Rhetoric as it is laid down in Scripture* The knowledge of the Scriptures possessed by the Puritans was knowledge developed by rigorous training in rhetoric Rhetoric was further 'turned to use in the teaching of the vernacular The rhetorics of Thomas Wilton and of Charles Butler (already mentioned) were supplemented by such books as that of Henry Peacham in 1577 the *Garden of Eloquence contayning the figures of Grammar and Rhetorick from whence may be gathered all manner of Flowers Coulors Ornaments Exornations Formes and Fashions of Speech*

Rhetoric as Training in the Vernacular A still further adaptation of rhetoric took place in the rhetoric of Abraham Fraunce who extended rhetorical training by applying rhetorical rules to the Scriptures and to the English vernacular including the writings of Sir Philip Sidney and Edmund Spenser, and also to modern languages generally In his remarkable *Arcadian Rhetorike or The Precepts of Rhetorike made plain by examples Greek Latin English Italian French Spanish* 1584 Fraunce intended his rhetoric for the students of the Inns of Court and his advance in the application of rhetoric away from the classics to more universal usefulness is another instance of the way in which educational reforms have so often in England found their source outside the universities In this instance Fraunce learned the idea from Peter Ramus the great reformer of logic teaching The application of classical methods to the study of English made it possible by 1657 for Joshua Poole to produce his *English Parnassus* which contains 340 pages of an English anthology on all kinds of subjects with illustrations of epithets and phrases from Shakespeare Milton Sidney Spenser Ben Jonson Chapman Robert Burton George Herbert etc etc In fact Poole produced an English *Copia Verborum et Rerum* which at least vies with Erasmus s Latin *Copia Verborum et Rerum* and shows the productive usefulness to which *Rhetoric* had been turned in a hundred years after its application from the Classics to English

After the Restoration, the study of the Classics rapidly declined In the eighteenth century the influence of the Port Royalists through Rollin set in and produced works of a more distinctly philosophical and critical type such as Hugh Blair's *Lectures on Rhetoric and Belles Lettres* 1783 The nineteenth century is best represented by Alexander Bain s *English Composition and Rhetoric* 1866 There can be no doubt that, in the twentieth century, there is great deficiency in the training in composition Schools are inclined to regard the subject as one for the universities and such training as is given is largely that of Latin prose and verse composition 'Free' composition receives its main practice through modern language teaching In the primary schools there is a growing readiness to follow the methods of the American schools in the direction of "recitation" and oral composition But at present in English schools, and even in the universities, there is comparatively little systematic study of the underlying principles of composition and style such as were in use in the sixteenth and seventeenth centuries under the title of Rhetoric

F W

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RHETORICAL SCHOOL —The first to teach the theory and practice of oratory were the Sicilian Greeks, the founder of the system being Corax of Syracuse (500 B C) Later masters of rhetoric were Antiphon (the first writer of speeches to be delivered in court) Isocrates Demosthenes and Aristotle (the founder of the peripatetic school) all of whom were Greek Cicero and Quintilian were Roman rhetoricians

RHEUMATISM —See AILMENTS AND INFECTIOUS DISEASES IN SCHOOL LIFE)

RHODES SCHOLARSHIPS, THE —These were founded by the will of Cecil Rhodes who died at Muizenburg near Cape Town, on 26th March, 1902 The main will is dated 1st July, 1899 Codicils were added at various dates between July 1899, and March 1902

The trustees under the will in its original form were the Earl of Rosebery Earl Grey Mr Alfred Beit, Mr W T Stead, Sir Lewis Michell and Mr Bourchier F Hawksley Mr Stead s name was removed by codicil in January 1901, while those of Lord Milner and Dr (later Sir Starr) Jameson were subsequently added by codicils dated 1901 and 1902 respectively

Under the will exclusive of codicils scholarships were to be established for students from the British Colonies and from the United States "of the yearly value of £300 and tenable at any College in the University of Oxford for three consecutive academic years" To South Africa, 8 yearly scholarships were assigned to Australasia 7 to Canada, 2, to Newfoundland, Jamaica, and Bermuda 1 each It may be noted that to two only of the eight provinces of Canada are scholarships assigned under the above scheme viz Ontario and Quebec This "apparently unintentional' omission of Nova Scotia New Brunswick Prince Edward Island Manitoba North-West Territories British Columbia, was remedied by the immediate action of the

trustees who assigned annual scholarships to each of the neglected provinces

In the United States, Mr Rhodes assigned two scholarships to each State or territory in the Union though leaving to his trustees' discretion to withhold for such time as they shall think fit the appropriation of scholarships to any territory At the present time scholarships are assigned to the forty-eight States The scholarships being tenable for three years and the number assigned to each State being two it follows that there must be one year out of every three in which no scholarship is available Until 1916 the plan was followed of electing from all the forty-eight States in two years out of every three and leaving one year in which no elections were held Since 1916 the elections have been spread over three years and thirty two States now elect each year

By a codicil to his will dated 1901 Mr Rhodes further assigned five annual scholarships of the value of £250 each to German students to be nominated by the German Emperor

Motives and Ideals It is impossible to dismiss this document without some reference to the motives and ideals which inspired it It was no sudden thought It was born of years of brooding In 1877 when barely 24 years of age and possessed still of very modest means Mr Rhodes drew up his first will In that will he left all his possessions to the Secretary of State for the Colonies for the time being and to a certain Mr Shippard for the purposes of extending and consolidating the British Empire and of restoring Anglo-Saxon unity with a view to the prevention of wars and the betterment of humanity This was only one of several wills made by Mr Rhodes at one time or another but while he altered the form and details there was no change—at most some expansion—of the ideas that lay behind Even in his last will drawn up nearly twenty five years later than the simple document of 1877 the dominating principle is the same viz a union of the English speaking peoples with a view to the promotion throughout the world of justice, liberty and peace It is true that in this last will the Germans also are included to the extent at any rate of five annual scholarships and it is arguable that this inclusion of the Germans foreshadowed an extension of Mr Rhodes s thought that he had begun to wonder whether into the union of English speaking peoples the German nation might not yet come as fellow workers towards justice liberty and peace On the whole however it is perhaps more likely that this afterthought of 1901 while made possible by Mr Rhodes s friendly interview with the German Emperor some months earlier was still largely an impulse of the moment not very intimately or hopefully connected with the main objects of the will In any case the events of 1914 provided too significant a criticism on Germany's capacity for contributing to the peace of the world and in 1916 the German Scholarships were abolished the money so released being used to found scholarships for communities within the Dominions for which the will had made no provision

Inspired then with this ideal—the establishment throughout the world of peace justice and liberty —and profoundly convinced that the hope of its realization lay in a union not necessarily constitutional but at least spiritual of the Anglo Saxon peoples profoundly convinced also that division comes of ignorance and misunderstanding Mr Rhodes set himself to do what lay in his power towards the elimination of prejudice from the English-speaking world and the substitution for it of insight and understanding "Intellectual relations" he says in the codicil founding German scholarships "make the strongest ties" And it is in youth he held that we receive the impressions and form the friendships that persist and count in later life So arose and grew the scholarship idea

Principles of Selection But what manner of man was his scholar to be? Not the bookworm' Mr Rhodes was clear as to that "I direct that in the election of a student to a Scholarship, regard shall be had to (1) his literary and scholastic attainments (2) his fondness for and success in manly outdoor sports such as cricket football, and the like (3) his qualities of manhood truth courage devotion to duty sympathy for and protection of the weak kindliness unselfishness and fellowship and (4) his exhibition during school days of moral force of character and of instincts to lead and to take an interest in his schoolmates

The ideal Rhodes scholar clearly should give evidence of qualities at once of mind and of character that promise honourable achievement in the future and some real contribution to the betterment of society No system of selection could be expected to produce results always commensurate with so exacting an ideal Certainly it cannot be claimed that Rhodes scholars have invariably been distinguished by the qualities for which Mr Rhodes looked Still the experience of sixteen years abundantly justifies the hope that with a wider appreciation of the opportunities which such a scholarship offers and a growing determination on the part of those responsible for the selection of scholars to send only of their best the Rhodes scholar average will more and more approximate to the level of Mr Rhodes s ideal

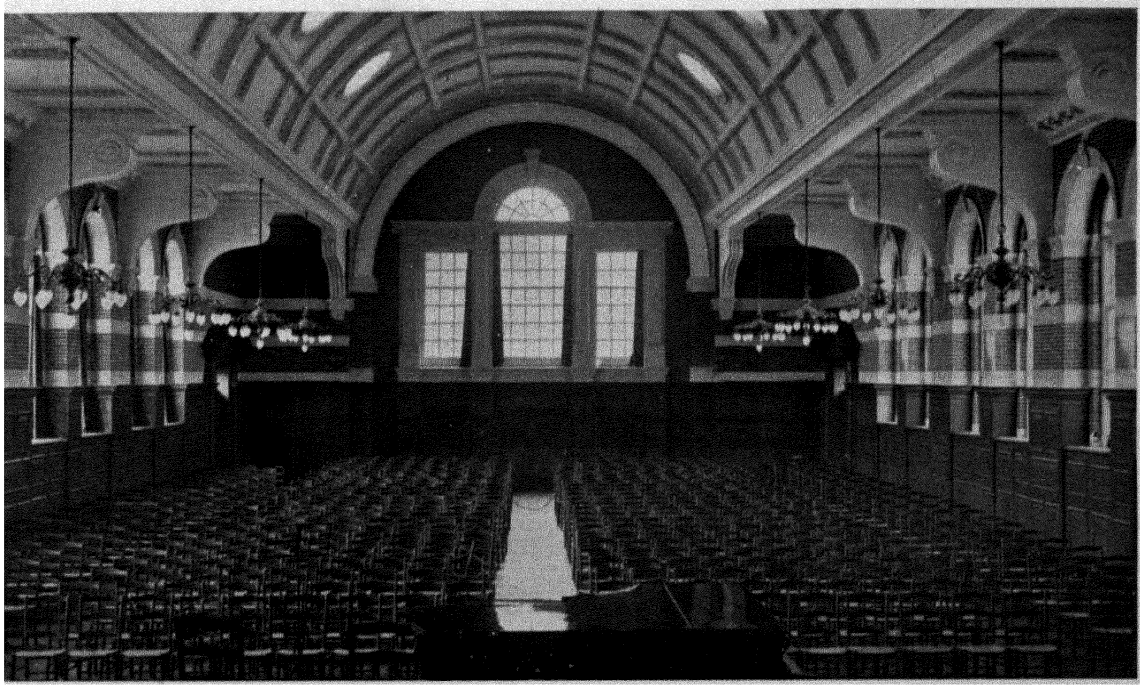
Mr Rhodes in his will made a few suggestions admittedly tentative as to possible methods of selection It has not proved practicable to carry out those suggestions in the letter They are in any case appropriate only where the appointment rests with a single institution, and, in making them Mr Rhodes did in fact have individual schools in mind Where candidates are drawn as in most cases they are drawn from a number of very different institutions it has not been possible to do more than carry out the spirit of Mr Rhodes's suggestions

Conditions vary slightly in different "constituencies As a rule however, the nomination rests with a local committee of selection This nomination is subject to ratification by the trustees but the responsibility of selection rests with the committees Candidates must be over 19 and under 25 and in nearly all cases must be at least in their second year at some degree granting institution Mr Rhodes it can hardly be doubted contemplated scholars of the lower rather than the higher of the above-named ages It seemed wise however to make the age conditions elastic and experience has justified the decision

Generally speaking the time at which it is most natural for a man to apply for a Rhodes Scholarship is immediately at the close of his B A course at a Colonial or American university, in other words at the age of 21 or 22 Occasionally it may be right to elect a man earlier in his career just as at the other end of the scale a man may sometimes be an appropriate candidate who has taken his Bachelor's degree some years later It is a question largely



University College, Reading—Cintra Lodge.



University College, Reading—College Hall

PLATE LXXIX

of character and temperament On the whole however, there are stronger arguments against a 19-year-old Rhodes scholar than there are against one of 23 Some of the most successful appointments in the past have been among the older men

Originally all candidates in the United States had to pass a qualifying examination in Latin Greek and mathematics as a condition of eligibility In 1910 Greek was made optional and in 1919 it was decided to drop the examination altogether In the early years of the scholarships the examination had served a useful purpose It had however seriously limited the field of selection without in itself providing any sufficient guarantee that those who passed it would be men of ability and attainments Its removal should make for improvement at once in the number and in the quality of candidates

As for the future of the scholarships that lies with the scholars Only in their lives can be found the answer to the question whether Mr Rhodes s belief in the efficacy of intercourse and environment was a sentimentalism—pleasant but mistaken—or a faith to be justified of its children Those who from intimate connection with the working of the scheme, have had the best opportunity for observing its results are the most confident as to its future

F J W

RHODES UNIVERSITY COLLEGE —(See SOUTH AFRICA THE EDUCATIONAL SYSTEM OF)

RHODESIA, EDUCATION IN —The pioneers of education in Rhodesia were the Sisters of the Dominican Order who in 1892 opened the first school for European children at Salisbury Convent schools for girls and small boys were also opened at Bulawayo in 1895 and at Gwelo in 1903 by the Dominican Sisters The Sisters were quickly followed by the Jesuit Fathers who founded St George s Boys Public School in Bulawayo in 1895 and by the English Church the Dutch Reformed Church and other religious bodies which established schools in Bulawayo Salisbury and other centres The teaching at these institutions was undenominational and all European children (irrespective of creed) were admitted The work was in every case from its inception assisted by Government grants

Creation of the Education Department In 1899 the first Education Ordinance was passed Its main provisions were the creation of an Education Department and the institution of a system of Government aid (on the £ for £ principle) to voluntary public schools At this time eight schools in the territory were in receipt of Government aid Seven were connected with some religious body while the Salisbury Public School was managed by a board composed of five members two of whom were nominated by the Government two by the Town Council (which guaranteed half the expenditure) and one elected by the parents The dual control by the Government and the municipality led to a deadlock and in 1902 at the latter s request the former undertook the management of the school and the provision of all the necessary funds

The Plumtree School opened in 1902, deserves special mention as it was founded by the English Church for the children of railway employees At first it provided boarding accommodation for boys and girls but it is now mainly a boarding school for boys day pupils from the village are however, admitted The school was controlled by a council consisting of nominees of the English Church, the railway company and the Government, in equal numbers, one-third of the children's fees only were paid by the parents, the remaining two-thirds being shared by the railway company and the Government This school, owing to financial difficulties, ultimately came under direct Government control

The Ordinance of 1903 and the Committee of 1908. By 1903 the larger centres were fairly well equipped with facilities for education but it had become manifest that modifications in the system were necessary A new Ordinance was accordingly brought into force under which Government aid, which could only be granted to schools with a minimum of twenty five pupils, was allowed to smaller schools Provision was also made for aiding school boarding houses, for assisting necessitous boarders for loans for the erection of school buildings for contributions towards rent of buildings, and for increased grants in aid of schools for coloured and native pupils A final clause empowered the Administrator to establish and maintain where necessary schools solely from public funds or to make special arrangements with any board of managers in order to secure the maintenance of a school The elastic nature of these provisions undoubtedly gave a great impetus to education but it is remarkable that the 1903 Ordinance did not result in the opening of new schools The growth of the population however aroused public interest and as a result of public meetings at Bulawayo and Salisbury, at which resolutions were passed expressing a strong desire for undenominational public schools as distinguished from schools primarily religious in character, a committee was appointed in 1908 to inquire into the whole system of education in the territory The committee recommended that Government should directly control primary education (which should be made compulsory within a walking distance of schools) should appoint advisory committees in connection with public schools should retain English as the sole medium of instruction, should uphold the right of entry of ministers of religion into the schools for the purpose of giving religious instruction to the children of their respective churches should provide boarding facilities at the larger centres and establish farm schools wherever eight children could be gathered together, in order to meet the needs of the rural districts and should provide centralized secondary education, with manual training for boys and domestic training for girls As occasion arose effect was gradually given to the reforms suggested by the committee, but the time was not considered ripe for the introduction of compulsory education and the qualifying minimum for farm schools was fixed at ten pupils

Some 'aided schools had already surrendered their independence owing to financial difficulties, and were now under Government control The number of aided schools gradually fell from fifteen at the end of 1906 to four at the end of 1914 The four now in existence are St George's School Bulawayo and the three Dominican Convent schools in Bulawayo Gwelo, and Salisbury

The Beit (Rhodesia) Bequest A most important factor in the expansion of Rhodesian education was the appointment in 1908 of a body of local trustees under the will of the late Mr Alfred Beit, who bequeathed £200 000 for " educational public and

other charitable purposes' in Rhodesia The trustees have materially assisted education in the territory by—

(1) The provision of twenty Beit Scholarships annually of £32 a year for three years to enable promising children to obtain secondary education in the higher schools of Rhodesia

(2) The grant of £2 000 a year for boarding grants of not more than £20 per annum per child to enable children whose homes are not less than three miles distant from the nearest school which provides suitable education to attend boarding schools in the territory (Government sets aside £4 800 annually for the same purpose)

(3) The allocation of funds to provide education and in some cases board and clothing as well for destitute or orphan children within the territory

The trustees also made to the Administration loans (repayable with interest) amounting to £49 050 for the erection and equipment of boarding houses in connection with Government high schools Four large boarding houses admirably designed and equipped were erected one each for boys and girls in Bulawayo and Salisbury Each provides accommodation for about seventy boarders and all are practically full In addition boarding accommodation is provided by Government in connection with schools in Gwelo Umtali (High School) Plumtree Melsetter Victoria Sinoia and the Primary School Bulawayo and similar accommodation is available at St George's School Bulawayo and the three convent schools Since 1910 many excellent new school buildings have been erected at the more important centres of education the total cost of which has exceeded £150 000 The provision of ample boarding facilities has effected a concentration of public secondary education in Bulawayo Salisbury Gwelo Plumtree and Umtali

Rhodes Scholarships Reference may here be made to the very special advantages which Rhodesian boys possess in the Rhodes Scholarships (*q v*) Three of these are available annually

Bursaries. By arrangement between the Government and the Rhodes University College Grahamstown three bursaries of the value of £42 per annum each tenable at Grahamstown are provided for matriculated students from Rhodesian Schools

Curricula The programmes of work have from the beginning been arranged with certain modifications to suit local conditions according to the requirements of the Cape Education Department and the University of South Africa Pupils not only receive the ordinary training incidental to public schools but in the larger centres they also have the advantage of instruction in commercial subjects science carpentry and ironwork for boys and botany dressmaking and domestic science for girls School gardening nature study and hygiene are encouraged whenever possible and no fewer than sixty schools possess libraries containing over 12 000 volumes School sports include football cricket hockey tennis swimming basket ball gymnastics boxing and rifle shooting and flourishing cadet corps and patrols of boy scouts and girl guides are in existence in connection with the principal schools With an estimated total European population of 35 000 it is not yet possible to provide for technical and university education within Rhodesia but Rhodesian students can obtain such education in the Union of South Africa at reasonable cost A start has however recently been made at the Eveline High School Bulawayo for young ladies to receive training as teachers Evening schools have from the earliest days been conducted at centres where there has been a demand for commercial training in such subjects as shorthand book keeping and typewriting A small demand at Umtali due to the presence of the engineering workshops of the Rhodesia railways for education of a technical nature has been met by the establishment of evening classes the teaching of which is shared by the members of the school and railway technical staffs

Compulsory Elementary Education In 1916 a committee was appointed to investigate certain aspects of primary education especially in regard to the problems connected with compulsion and rural education The committee recommended that primary education should be made compulsory from 7 years of age to 15 or Standard VI In view of the large area to be covered and the many scattered homes some children can only be educated efficiently at boarding schools It was recommended that for them compulsory attendance should begin at 10 years of age The committee recommended without hesitation that farm schools should be maintained and that where the qualifying minimum number of pupils could not be obtained the system already initiated of making grants of £12 per scholar per annum in aid of the salary of a governess should be extended The committee also considered that the system of farm schools must be supplemented by district boarding schools to which children could resort from their seventh year if desired but to which no child under 10 would be compelled to go The committee recommended that these district boarding schools should be conducted on simpler lines than the existing boarding schools and held that the cost per head of boarding the children ought not to exceed £32 per annum It also urged that the boarding fee be fixed at £20 the Government to provide the remainder

It was estimated that the cost of these reforms would amount to £20 000 annually

The following are the present uniform scales of boarding and tuition fees—

BOARDING	£48 per annum for one child	
	£44 per annum each for two in one family	
	£40 per annum each for three or more in one family	
TUITION	*Kindergarten*	15s per term per pupil
	Standards I to V	22s 6d per term per pupil
	Above Standard V	30s per term per pupil

Reductions in tuition fees are made where three or more children of one family attend public schools viz if three children attend half fees are charged for the third child if more than three children attend full fees are charged for three and the remainder are admitted free Tuition fees are also remitted in whole or in part in necessitous cases after careful inquiry into the merits of each case Tuition fees include the use of school books pens paper ink etc all books are school property and must be returned when the pupil leaves school

Coloured Schools The demand for schools for coloured children has until recently been met by means of grants to various missionary bodies which have opened such schools and assumed responsibility In 1916 however Government opened two coloured schools for which it is directly responsible

financially A number of coloured children attend various first and second-class native mission schools throughout Southern Rhodesia

Native Schools The education of aboriginal natives has been from the commencement and is still confined to the efforts of various missionary bodies The Ordinance of 1899 empowered the administrator to pay annually a sum not exceeding £50 to any native mission school which was open for at least 200 days during the year for four hours of which not less than two hours had to be devoted to industrial training provided the average daily attendance was not less than fifty Amendments in the law were made in 1903 1910 1914 and 1916 granting greater facilities and more elastic conditions Schools for natives are now divided into three classes First class schools are those in which there is a boarding establishment under the supervision of a European and in which (*a*) the school hours inclusive of two hours devoted to systematic industrial work are at least four hours a day (*b*) a sufficient number of pupils are taught to speak and understand the English language and (*c*) pupils are taught habits of cleanliness and discipline Second class schools have to fulfil the same conditions as first class schools except that the boarding establishment is dispensed with but actual instruction by a European teacher is insisted upon Third class schools are those under approved native teachers under the control of European superintendents where pupils are taught habits of cleanliness and discipline Grants are also made to combined boarding and day schools in aid of equipment domestic training teachers of industrial work and for the training of native teachers Provision is also made for payment of evening school grants The maximum grant is now £200 per annum In 1916 the industrial work for which special grants were paid included instruction in animal husbandry and agriculture carpentry and building leather work dairying and laundry while payments were also made in respect of a number of native girls who received training in domestic work In three cases special grants were made to institutions which undertook the task of training native teachers There are altogether fourteen religious bodies undertaking the work of native education in the territory A simple code for native schools adopted a few years ago as a result of a missionary conference at which all Churches were represented is slowly removing one of the chief impediments to progress—defective gradation of work and the study of scholastic method and hygiene in a simple form in the leading missions continues

Statistics

EUROPEAN SCHOOLS

	1900	1908	1916	1919
High Schools	—	—	— 5	5
Town & Village Schools	—	4	21	25
Single Teacher (Farm and Mine) Schools	—	5	47	47
Governess Schools	—	—	3	21
Aided Schools	8	13	4	4
Total	8	22	80	102
Pupils				
Public Schools	—	396	3 106	3 914
Aided Schools	433	617	637	760
Total	433	1,013	3 743	4,674

Teachers

	1900	1908	1916	1919
In Public Schools—	—	16	164	209
(*a*) With Teachers Certificates	—	11	125	178
(*b*) Graduates of British or Colonial Universities	—	1	24	30
Aided Schools	23	46	59	69
Total	23	74	372	486

COLOURED SCHOOLS

	1900	1908	1916	1919
Schools	1	1	6	3
Pupils	38	55	196	155
Expenditure	£75	£100	£792	£1 126

NATIVE SCHOOLS

	1900	1908	1916	1919
1st Class		10	23	24
2nd Class	3	7	41	39
3rd Class		33	349	607
Evening Schools	—	—	13	26
Total	3	50	426	696

	1900	1908	1916	1919
Number of Pupils qualifying for Grant	—	2,594	17 872	23 231
Number of Pupils on Roll at end of year	265	4,319	27,776	39,381
Amount of Grants earned	£232	£1 192	£7 563	£8 413
Total Expenditure on all Schools (excluding capital expenditure on buildings)	£2,502	£11,173	£88,640	£125,564
Receipts from Boarding and Tuition Fees (European Public Schools)	—	£342	£26,794	£39,586

Officials The Director of Education has a staff of four inspectors of schools an inspectress of kindergarten and needlework and a clerical staff of ten

Northern Rhodesia There is no organized education department in Northern Rhodesia but schools have been opened for European children by the administration of that territory and are supported from public funds At present there are eight with an enrolment of about 220 pupils They are inspected from time to time by the inspectors attached to the Southern Rhodesia staff Native education is mainly undertaken by various religious bodies

The record of educational progress speaks for itself When it is considered that Rhodesia was occupied and thrown open for European colonization on 12th September 1890 the rapid development of educational facilities is a record of which the British South Africa Company may justly be proud Soon after the official visit to the territory in 1906 Lord Selborne then High Commissioner for South Africa was able from personal observation to express the view that "admirable (educational) work had been done in the short space of time' It can safely be asserted that no young country has ever put forth more strenuous efforts than Rhodesia to cope with its educational problems

J S B

RHYME AS AN EDUCATIONAL AID.—(See DEVICES FOR TEACHING)

RHYTHM AND TRAINING IN MUSICAL APPRECIATION —Rhythm is that aspect of music which

appeals first to young children and considerable advance in the appreciation of rhythm can be made at an early age, especially if the appeal is made through movement

The first unanalysed feeling for rhythm comes through natural rhythmic movements of the body such as marching, skipping dancing in circles rocking and so on, or through free movement in response to music of a strong rhythmic nature The pace of the marching should be varied, and the children should be expected to follow the music exactly Music containing the rhythmic form  is best for the skipping step any quick music in $\frac{6}{8}$ time for dancing in circles any *berceuse* for rocking As to free movement descriptive pieces which lend themselves to a story setting are best at first such for example as Heller s *Mermaid* Jensen's *Elfin Dance* Schumann's *Fürchtenmachen* After such work as this however advance cannot be made on the rhythmic side without a knowledge of varying note-values and those are heard better if they are also felt Nowhere is the value of muscular sensations, and the memory engendered by them more clearly evident

It is possible to do this work with various movements systematically thought out M Jaques-Dalcroze has brought this fact before us most strikingly and beautifully in his system of "Eurhythmics'

Since however, we are concerned with the training of listeners rather than performers only the simpler part of this system or a similar one will be used We get what has been called a "motor scheme" of speech which enables us to follow and understand it when spoken by others before we arrive at that close analysis which enables us to speak it ourselves with absolute ease and fluency So in music we can comprehend and appreciate rhythm without that very close analysis which would enable us to express through our bodies all the subtleties of musical rhythm

Great help will be gained in teaching note-values if the teacher makes use of the French "Time-Names" of M Aimé Paris The movement of the rhythms is most happily translated by the sound of the names Rhythms may also be clapped sometimes instead of being stepped From the very beginning children should be taught to write down the rhythms to which they have listened

When children know the commonest note values found in simple rhythms they can step the phrases of songs and nursery rhymes or such melodies as Schumann s *Merry Peasant* or *Prince Rupert* By alteration of direction or by other means the separate phrases can be shown and it is quite possible to devise pretty arrangements for these simple melodies It is just here that teachers are apt to err in the matter of "action' songs the actions must suit the music as well as the words This is not always remembered the actions are often unrhythmical and frequently break up the true rhythm of the music

Conducting simple songs is another means of training children's rhythmic sense and one from which they get great enjoyment M S

RHYTHMIC GYMNASTICS —(See EURYTHMICS, THE JAQUES-DALCROZE METHOD OF)

RICHELIEU, ARMAND JEAN DUPLESSIS [Duc de Richelieu] (1585-1642) —He became Secretary for War and Foreign Affairs under Louis XIII of France in 1616, cardinal in 1622, and Minister of State in 1624 The last-named position he held till the end of his life He secured an alliance with England in 1625 by the marriage of Henrietta Marie with Charles I made peace with Spain in 1626 and proceeded to destroy the political power of the Huguenot party In 1630 he subdued Savoy, and in the same year secured the whole power of the realm by the overthrow of the Queen-mother s party The remaining years of his life were largely occupied by wars with Spain and contests with the nobles of France who opposed his efforts to establish a strong absolute monarchy He built up the power of the French Crown, crushing alike local liberties and constitutional government and overwhelmed the nation with taxation In 1635 he transformed a private association of poets of little importance into the Academie Française and made it a national institution for the purpose of rendering the French language pure simple and capable of treating the arts and sciences

RICCARDI PRESS, THE —(See MEDICI SOCIETY, THE)

RICHTER, JEAN PAUL FRIEDRICH (usually known as Jean Paul) —He was born near Baireuth in 1763 He was educated at Hof and Leipzig in order to be prepared for the Church but he turned from theology to general literature studying among other writers Pope Swift and Young He began to publish his writings as early as 1783 but lived for some years in very straitened circumstances near Hof gaining his living by teaching in his own private school By 1794 he had made himself a name as a writer and left Hof for Leipzig and afterwards Berlin He obtained the valuable patronage of Prince Dalbey the primate of Germany who was a generous promoter of literature and settled on Richter a pension of a thousand florins Richter died at Baireuth in 1825 He was one of the most original geniuses of Germany but his merits can be fully appreciated only by his fellow-countrymen His works are very difficult to translate into other languages He was a keen observer of nature a master of pathos and sentimental humour and his praises of love and friendship secured him a large circle of readers and admirers—especially among women His novels lack accuracy and artistic form and he often fails to give concise utterance to his thoughts His educational writings include a series of reflections on literature educational methods and the training of the young

RIDERS.—(See GEOMETRY, THE TEACHING OF)

RIEMANN GEORG FRIEDRICH BERNHARD.—(See GAUSS KARL FRIEDRICH and WEIERSTRASS)

RINK, FRIEDRICH THEODOR.—(See KANT IMMANUEL IN RELATION TO EDUCATION)

RIPON TRAINING COLLEGE —In 1841 the Ripon Diocesan Board of Education was established under Bishop Longley and opened a training college for schoolmasters at York The students were transferred to new buildings in 1846 and a training college for mistresses established in their place with three students in the first year and eleven and thirty-three respectively in the two

following years Miss Cruse was superintendent she and her sisters formed the staff and a clergyman occasionally gave lessons in religious knowledge

In 1858 the buildings were condemned as unsuitable, and Bishop Bickersteth started a fund for building a college at Ripon The new College was opened in 1862 with the Rev G Sheffield as the first principal, and the Holy Trinity National Schools were used as the practising schools for the students who numbered sixty-three Canon Badcock was principal from 1863 to 1890 and the Rev G W Garrod formerly of St John s College Battersea from 1891 to 1909

In 1892 the Association of Past Students was formed and began to publish the College Magazine which has appeared yearly ever since and has given a full and useful history of the College and its members—past and present The practice of sending students on "Visits of Observation" commenced in 1895 and this was extended in 1897 when students were sent to schools in the large cities of Yorkshire for three weeks' continuous practice

In 1895 it was decided to enlarge the College and after using a temporary hostel for two years, new buildings were opened in 1899 affording accommodation for forty extra students and providing a new chapel a large common room a science room and a laboratory

In 1902 the College was affiliated with Durham University and two years residence at Ripon may now be reckoned as part of the requisite keeping of terms at Durham As a result of changes brought about by the Education Act of 1902 an undenominational hostel for twenty two students was opened in 1904 under a resident head The Rev G Garrod was appointed Residential Canon of Ripon Cathedral in 1907 with the educational oversight of the diocese and gave up his position as principal in 1909 He was succeeded by the Rev Isaac A Smith

An interesting feature of college life at Ripon is afforded by the excursions to places of interest of which Yorkshire provides many and the visits to such places—Rievaulx Abbey and Fountains Abbey —are made useful as well as pleasurable The College possesses a museum dating from 1893 and a library established in 1912

RITTER, KARL (1779–1859) —Educated under Niemeyer at Halle University for the profession of teacher became tutor in the Bethmann-Hollweg family at Frankfort in 1798 He devoted many years of his life to his pupil from the age of 7 until he had passed through the university Much of his time was spent in travelling and tutor and pupil devoted much attention to the study of natural history After 1809 he taught in the Frankfort Gymnasium and from 1814 to 1819 studied at Göttingen Intercourse with Pestalozzi led to his early application of that teacher s methods to the teaching of geography and he also wrote instructions on the teaching of drawing, in which he was an expert He prepared charts for school use illustrating the geography of Europe in this respect preceding Humboldt He spent many years in preparing his great work *Die Erdkunde* which he described as a "Manual of General Geography aiming to substantiate the claim of this department to the name of science' From 1820 he lectured at Berlin University as Professor of Geography, introducing new views and methods into geographical science Until the end his lectures were intensely popular, being characterized by his eloquence, simple style, and blackboard illustrations Ritter founded the Royal Geographical Society of Berlin, and was for many years its president

ROBESPIERRE —(See FRENCH REVOLUTION, EDUCATION DURING THE)

ROMAN ARCHAEOLOGY —Roman archaeology, as compared with Greek, may be said to have the same scope and can be mapped out into the same special fields but the student will usually feel that the significance of its various aspects is markedly different For, while Greek archaeology makes equal appeal to the student of art and to the student of history the fascination of Roman archaeology is stronger for the historian The art-history of Imperial Rome has indeed its high importance but, as soon as it begins to come clearly within our purview the influence of Greece upon it is found to be all pervasive The result is that neither Roman sculpture and painting nor Roman vases nor coins, nor architecture nor writing, can be studied independently of the Greek and the Roman archaeologist is not equipped for his task unless he has served his apprenticeship in the various departments of the other nation s antiquities

We cannot with certainty determine when Greek influence began to pervade any part of Roman life we know that Rome adopted her alphabet from the Greek city of Cumae before the fifth century B C For the earliest period of the growth of the city monumental evidence has been almost lacking until recently But in the last few years excavations of prehistoric habitations especially on the Palatine and in the Forum have contributed something to the ethnologic problems concerning the origin of the population of Rome their connection with the Villa Nova and Terremare culture of the Po Valley, and incidentally the ethnic relation of the patrician and plebeian stocks The material will probably accumulate rapidly in the future At present it has not sufficed for the clear settlement of the questions that arise concerning it

Roman archaeology proper may be said to begin with the amalgamation of the settlements of the Palatine and Quirinal Hills around the Forum and with the kings Of the first part of this period it is doubtful whether we possess any architectural remains we have nothing at least in the way of art-monuments Perhaps the inscription above the *Lapis Niger* the black horizontal slab in the Forum may be regarded as the earliest monument of Roman archaeology that has come down to us, and the forms of its letters suggest that the Greek alphabet of Cumae was already penetrating Rome in the sixth century B C

In the earliest period, what art-influence prevailed was mainly Etrurian From the fourth century onwards the city became more and more penetrated by the various streams of Hellenic culture But even of this later Rome we have the scantiest monumental material for our evidence, and the various fields of Roman archaeology only begin to find copious material in the first century B C, and are concerned chiefly with the Imperial period Even when the Rome of the Caesars was replete with art of all kinds it remains for the most part an exotic, the Roman genius did not naturally express itself in imaginative art-forms, the only monuments on which it is vividly impressed are works of architecture

Sculpture A native school of sculpture never existed throughout the long history of Rome In the earlier Republican period there was no demand for the higher products of plastic art The early Roman religion demanded no idols nor had the hardy burghers of the small city-state any stimulus or opportunity to be collectors their wants in this direction might be satisfied by simple terra-cotta images such as Etruria could supply The earliest portrait-sculpture shows much of Tuscan influence But in the third century Greek divinities began to be accepted into Rome and Greek worship must have brought Greek temple images Later when the East was conquered Rome became the pillage-depôt of the world The earliest art centre with which Rome came into close contact was Pergamon The Pergamene School had won fame in historic sculpture, which was to be the dominant interest of Rome the Attalid dynasty were devoted to a pro Roman policy and their artists were the first to carve a Roman story in stone The last king of the dynasty left his art treasures to Rome 133 B C and for many centuries afterwards the impress of the violent and pathetic style of Pergamon can be seen on late Roman plastic works The other historic event important for the archaeology of Rome was the destruction of Corinth (146 B C) The vast treasures of art accumulated there were brought to Rome, and some dispersed about Italy In the next century the wealthy Roman was often the art amateur and the passionate collector until by the age of Augustus palaces and villas were adorned with the masterpieces of Greece And as few could possess the originals the later Greek sculptors produced copies in bronze or marble for the Roman market

The Roman or Graeco Roman period of sculpture may be said to begin with the close of the independence of and of the independent art school of Rhodes whose last original work that has come down to us is the Laocoon (*c* 60 B C) but not in the sense that any school or group of Roman sculptors ever existed In the vast list of names recorded by ancient literature and inscriptions scarcely one undoubtedly Roman occurs We must suppose the employment in the ateliers of Rome of local Latin handicraftsmen but the masters are still Greek The question then arises if sculpture was carried on mainly by the same race how is it differentiated from the purely Greek ? So far as its subjects were mythological and religious it is marked out from the older work by an increase of frivolity and a lack of all religious inspiration or conviction It attained far higher success in the field of portraiture, and, though Graeco Roman portraits are inferior in imagination and insight to those of the Hellenistic age, they astonish us with their vivid realism and character which continue Tuscan tradition But the most original Graeco Roman sculpture was the historical relief work which came to adorn the great monuments of the Caesars—the Arch of Titus the Column of Trajan—with scenes of the triumph of Roman arms It is specially in these that writers like Wickhoff and Mrs Strong discern a higher and nobler spirit proper to Imperial Rome and a new solution of the problems of plastic representation The student may see here only one more original achievement of Hellenism working in a new atmosphere and on themes of new inspiration for the hands that adorned these monuments are still Greek and we know that the architect of the Forum of Trajan was a Greek of Damascus

Roman sculpture closes with the era of Constantine In spirit and technique it often contrasts markedly with the older Hellenic and in some respects opened new paths of art progress But, in the mere technical processes of handling marble and bronze its inferiority is palpable When free Greek sculpture ended with the Rhodian school the sculptors seem suddenly to have lost the art of imparting warmth to the surface of marble

A special branch of the study of Roman sculpture is the sculpture of the provinces—Gaul Spain and Africa As this was undoubtedly the work of local craftsmen local religious and other ideas are found in it often of great historic interest A valuable study of Gallo Roman monuments has been published by M Salomon Reinach

Roman Painting The question again arises whether we can speak of a native Roman style in this field The names of a few painters are recorded by Pliny and Symmachus but some are of doubtful authority and only three are praised Of undoubted Roman origin can be mentioned only Fabius Pictor at the end of the fourth century B C and Turpilius, a Roman knight contemporary with Pliny The few other painters with Latin names may be foreigners or Italians like Pacuvius the native Italian genius appears in some beautiful Oscan paintings of the third century But our material is insufficient to attest the character and importance of any genuine Roman school The paintings in the house of Livia on the Palatine and those discovered in a house on the Esquiline (now in the Vatican) show Hellenistic spirit but a certain architectural arrangement perhaps due to the demands of the Roman taste for decoration The same may be said of the greater part of the paintings of Pompeii and Herculaneum by far the most copious evidence of the pictorial art of the early Empire A few of these such as the *Medea* have a higher value as copies of famous Greek originals Many also show a striking style of landscape As the neighbourhood was penetrated with a Greek strain it is likely that the craftsmen were mainly Greek

Mosaic Akin to painting was Mosaic the invention of a Pergamene Greek which acquired extraordinary vogue and though it never lost the Greek tradition was maintained in the provinces by local craftsmen using local or Roman subjects as well as Greek

Roman Pottery, singularly unlike the Greek does not concern the higher history of painting the "Samian or Arretine ware distributed widely through the Roman world has an importance only for technology and commercial history Far more important are the products of the glyptic and toreutic art of the Roman period

Coins and Gems The earliest coinage of the Republic shows marked Greek influence but at no period does Roman coinage ever rise like the Greek to a triumphant level of art The portraits of the emperors on the coins should be studied by the side of the portrait statues On the whole the importance of Roman numismatics is historical and political

It is otherwise with the art of gem cutting This beautiful art in which the early Greek craftsman was supreme maintained a high level under the early Empire The cameo of Augustus in the British Museum the *Grande Camée* in the Cabinet des Médailles are masterpieces But the masters whose names are preserved are usually Greek and the few who bear Latin names were probably of Greek

origin Here, as so often, ' Roman ' art means merely Greek commissioned by Rome

Architecture. The most important branch of Roman archaeology, properly so called is architecture for to this sole art, which combines the practical and aesthetic in equal measure the Roman genius had a native bent, and, if we investigate Roman antiquities, in order to gain the true impression of the grandeur of Rome and the significance of its life and power it is to the architectural remains that we turn our main attention Here, again Rome was the pupil of the races of older culture the Etruscans and Greeks and no doubt many of her great Imperial works were designed by Greek architects But Vitruvius boldly maintains the equality of his countrymen to the Greeks in this domain, and no Roman writer dares to make such a claim for any other art Roman architecture sets itself new problems in the arch the vault, and the dome and the very spirit of the people and its rulers is impressed on the palaces the baths the aqueducts the theatres and the triumphal arches A question has arisen which is not yet settled whether we can trace the influence of the East on later Roman architecture

Epigraphy The study of Latin inscriptions is less properly a branch of archaeology than is Greek epigraphy but belongs rather to general history The huge bulk of inscriptions in the *Corpus Inscriptionum Latinarum* constitutes one of our chief and perhaps most trustworthy sources for Roman history for instance the record of the reign of Augustus depends on the *Monumentum Ancyranum* our knowledge of the Roman military forces and their distribution throughout the Empire the administration of the provinces the diffusion of Oriental religions throughout the Roman world is obtained mainly through epigraphical evidence

Religion The subject of Roman religion is a great and complex field of learning, but the part that the evidence of monuments plays in it is less than in the department of Greek religion The chief task is to separate the pure and original Roman elements from the superstructure of Greek polytheism that came in to overlay them from the third century B C onwards The main evidence for the aboriginal stratum is the old Roman *Fasti* preserved in inscriptions and in two MSS It presents a religious system of peculiar national traits rare in the world s history The religion of the Roman Empire is quite different but includes the history of Mithraism and other Oriental cults that moved westward and touches at last on the rise of Christianity L R F

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ROMAN CATHOLIC CLERGY, THE TRAINING OF THE —Since the great revival which began about the year 1540 in the Roman Communion its diocesan or secular clergy have been trained on a uniform system laid down by the Council of Trent (Session 23 15th July 1563) It is known as the seminary system, and is distinguished by aim and method from the life of a university The word may be translated " seed plot in which sense it was first officially applied, as would appear, by Cardinal Pole when issuing his plans for England's future in 1556 The origin and prime instance of the seminary thus understood may be traced, however to the Society of Jesus and the German College in Rome founded in 1553 by St Ignatius of Loyola Other institutions followed as the Roman Diocesan Seminary and those of Milan Munster Lisbon Prague within the next sixty years Of all the pattern was very much as conceived by St Charles Borromeo the zealous Archbishop of Milan (1538–1584) whose energy brought the Council of Trent to a successful close Certain changes came in with St Vincent de Paul and M Olier who began the famous College of St Sulpice in Paris (1642) from which seminaries have been derived all over France in Canada and U S A When the strong anti clerical movement called after Joseph II of Austria prevailed (1780) the bishops seminaries were suppressed in favour of central State academies at Vienna Louvain Pavia, etc But neither bishops nor students would give way and the former system was restored Equal failure attended on the efforts of the Bavarian Government prior to 1817, and of the Imperial German in its Kulturkampf of 1873 In the English speaking world it is only of recent years that the strict seminary system has flourished Colleges at Rome Douai Salamanca Valladolid and elsewhere on the Continent offered education to the clergy during the Penal Laws and down to the French Revolution Since then Maynooth (founded in 1795 under the auspices of Edmund Burke), Ushaw, Oscott and similar colleges have done duty as theological centres while St Edmund's, Ware Wonersh Upholland, are episcopal seminaries exclusively attached as diocesan to Westminster, Southwark and Liverpool In Canada, there is Laval at Quebec (1663) now a university besides others at Montreal, Ottawa Toronto Halifax Seminary training in U S A dates from 1791, when the Sulpician Order opened St Mary's, Baltimore, under Bishop Carroll Most of the American clergy are trained in seminaries which take students from many dioceses, as New York and Rochester The

Catholic University of Washington, D C, established on seminary lines in its theological department, is for post graduates In France, by the Law of Separation, all seminaries were confiscated to the State in 1906, but new ones on the voluntary principle are springing up In Italy, Pius X suppressed many of the smaller houses, combined various others on an interdiocesan plan, and re arranged their studies The list of ninety five seminaries now extant among English-speaking Catholics includes training colleges for foreign missions

Aims and Ideals As the Roman clergy fall into two divisions, the secular or diocesan, and the regular, belonging to communities under vow, certain differences in their education are inevitable On the other hand as all priests have been ordained to the same offices and all in the Latin Church are celibate the chief points in or out of the cloister bear a strong resemblance Every priest celebrates Mass, recites the Breviary, must be taught how to administer the Sacraments (especially how to hear confessions) and is required to have a competent knowledge of Holy Scripture dogmatic theology and the principles of the spiritual life His calling is that of pastor and teacher hence he must be well-grounded in his faith which will often involve acquaintance with controversial literature and supposes him to have read the main outlines of Church history Moreover the language of the Liturgy in the Western Church is Latin which is also that of the Vulgate the "authorized version" of Holy Scripture recognized at Trent Official communications with Rome are mostly carried on in Latin Though Greek and Hebrew never can lose their dignity as the original sacred tongues a knowledge of them is not indispensable Success in preaching demands besides native gifts a mastery over the language to be used in the pulpit And the severe dedication of a lifetime to the poor the sick, the uneducated, which is largely a priest s experience could not be achieved without long-continued discipline The diocesan priest does not contemplate any more than the regular or the missionary to settle down in an easy profession He leads a hidden life much of it in poverty and loneliness, burdened with debts not his own liable in modern countries to frequent change of place and duty On principle he renounces the hope of distinction or reward When not engaged in work he seeks retirement and his hours are filled with religious meditations daily Mass the recitation of the Church's "Office" reading, catechizing and sometimes attendance on public committees which last duty is undertaken as a task more willingly left to laymen On the whole a clergy brought up in seminaries tends to be secluded from the world and in France or Italy since the troubles of the Revolution bishops and priests alike, with few exceptions have shrunk from observation

Methods. In practice about ten years are spent under this training before the lad who leaves home at 14 receives the order of priesthood His first stage takes him to the junior seminary where he is taught the elements of a liberal education He may still be associated with "lay" scholars, but in many places abroad he wears the cassock and seldom or never goes home during vacation When he has passed an examination corresponding to the Oxford Senior Local he is transferred to the Greater Seminary where he should according to the regulations of Pius X, spend three years in studying philosophy and four in divinity This will depend on his special abilities and the needs of the diocese By philosophy, we must understand a system founded in the main upon Aristotle's treatises from Logic to the "Ethics" enriched by Platonic additions which have come down through St Augustine the whole thrown into syllogistic form by St Thomas Aquinas (died 1274) The Greek originals are not regularly studied except by professors, and Aquinas himself has been digested into a multitude of text books Leo XIII made it a duty to teach philosophy according to the actual wording of the "Angelic Doctor", but he did not forbid comments which deal with modern problems and authors Dialectic subtlety is encouraged by the practice, elsewhere obsolete of disputations in form where every argument is brought down to the bare syllogism without rhetoric—a sort of metaphysical algebra Lectures and "defensions" are held in Latin The history of the Church, apologetics essays on the origin, value and limits of human reason complete a strenuous course, more attractive in its purely philosophical aspects to Germans and Italians than to the average English mind It may now comprise under ethics an attempt to solve economic or social questions in the light of Christian principles, as expounded by Leo XIII in his Encyclical Letters on Socialism and the condition of labour

"Divines as the men are called give about four years to the study of theology taking Canon Law, cases of conscience ceremonial practice, by the way Theology draws its basic principles and facts from Scripture and Tradition as the Council of Trent teaches Hence, on the scholastic method it is handled scientifically and free speculation is permitted only on points where authority has not yet spoken Holy Scripture receives now more of a critical and historical attention but its inspired character is never in dispute while any tendencies to "Modernism in exposition would be sternly put down Dogmatic treatises follow the order of the creed from belief in God the Creator to eschatology "the four Last Things" Church and Sacraments occupy the central position and the claims of the Holy See are enforced with much reference to history In the tracts which deal with Redemption Grace, Predestination, an array of "condemned' propositions representing Wyclif, Luther Calvin Jansenius defines the orthodox path and, while variety of mere "opinions" is tolerated the Seminary even where there is freedom commonly prefers the Jesuit views The interpretations of divine grace technically known as Thomist or Augustinian find few disciples among the secular clergy But on the deep mysteries of Trinity and Incarnation it is St Augustine more than the Greek Fathers who has dominated in the Western schools Text-books of dogma present in adaptable form the pith and marrow of the *Summa Theologica* written by St Thomas Aquinas, with little change of language and less of matter The Seminary does not aim at speculation but is meant to mould its students on a clearly drawn pattern, the *quod semper, quod ubique, quod ab omnibus* of Vincent of Lerins However, at the National Colleges in Rome at Louvain at Washington, and in connection with the Catholic universities of France, openings are afforded to research and originality and from these or the like centres men go out to be professors in the local institutions Some bishops, again, have entrusted their seminaries to the Sulpician or

Jesuit orders, in which masters get a special training for this work When the diocesan clergy are employed, they have, as a rule, been brought up with a view to teaching at the end of their course

Results. "Discipline" beginning early and continued till the day of ordination, has much in common with a soldier's apprenticeship to arms Outwardly severe it is reinforced by spiritual motives and exercises, by silent meditation, frequent retreats according to the method of St Ignatius liturgical offices, daily Mass and communion, lessons in ascetic or mystic theology and unremitting care on the part of superiors Candidates are sifted, the conferring or withholding of sacred orders at distinct intervals gives the bishop occasions when he may act on his judgment, but quitting the seminary is in itself no ground of dishonour One bishop cannot receive students from another diocese without consent of his brother-ordinary a man dismissed as unfit for the priesthood by any prelate is not to be accepted elsewhere

The general result of studies and discipline may be summed up as the creation of a highly specialized class of men, uniform in their faith adapted to a great variety of religious and charitable functions convinced of their supernatural powers decided and precise in action, accustomed from youth up to self-control obedient to orders like an army on campaign and capable of passive resistance even unto martyrdom when their Church is attacked by secular governments Living a life apart, and shut out from the prizes of worldly professions, sprung from every class knowing their people intimately the diocesan clergy do not propose to themselves renown in science or literature, nor yet political influence but what must be called emphatically edification—the building up of a Catholic parish in faith and good works They have the virtues of a practical wisdom acquired by years of silent self-formation to which experience brings a test not unlike that of the doctor and the magistrate Under trials such as the Kulturkampf in Germany the breaking of the Concordat in France, the strained relations between Italy and the Holy See their conduct has gone to prove that the seminary training was fully adequate to demands upon it for endurance and loyalty to principle As examples of moral probity and as champions of social order the clergy thus brought up contribute no small share to civilized life at its best They live up to their standard which is first realized in the seclusion of a model family, and then applied to the multifarious duties which await them outside By its decree which established seminaries for priestly education the Council of Trent not only reformed much that had given offence in late mediaeval times but also created the type of bishops and clergy predominant in the modern Catholic Church above all since its emancipation from the control of the State W BARRY

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ROMAN CATHOLIC CHURCH, THE TEACHING ORDERS OF THE.—Many of the religious Orders of the Roman Church and notably the Benedictines, the Dominicans and the Jesuits (*qq v*) have played a considerable part in the history of education For the Middle Ages besides the two first named, one other organization claims special notice This is the institute of the Brothers of the Common Life" founded by Gerard Groot in the latter half of the fourteenth century and chiefly remembered by the fact that Thomas à Kempis belonged to their body One of their schools that at Deventer is said in 1500 to have numbered 2 200 pupils while another at Liége had 1 600 Much of the instruction was gratuitous and the founder's design explicitly included the assistance of poorer students who were unable to pay for tuition

The First Religious Order of Teachers. Turning now to the post Renaissance period, we find it said that the Ursulines formally organized in 1535 by St Angela Merici at Brescia are the earliest in date of the strictly educational orders This however is hardly correct There is no mention of the work of education in the constitutions left by their foundress and, though from the very beginning the Sisters were much used for this purpose their uncloistered manner of life allowing them readily to undertake the charge of the young this special development seems rather to have been created by the needs of the times than to have been part of their original design Following the lead of St Ignatius Loyola who introduced into the formula of the Jesuit vows the mention of "a special care in the instruction of youth the real pioneer in the creation of a religious order of teachers seems to have been St Peter Fourier In 1598 this Burgundian priest founded the "Congrégation de Notre Dame the main purpose of which was the gratuitous instruction of young girls Writing to Rome in 1628 Fourier expressly recognized that his religious were teachers who adopted an ascetical life in order to fit themselves the better for their duty of Christian instruction It was not he declared an organization of which the members were nuns first and schoolmistresses afterwards The first part of the constitutions as he finally drafted them supplies a complete code of education marked by a deep sense of the practical needs of life and a notable spirit of religious tolerance

The Piarists. Less enlightened perhaps in its conception but more fruitful in its ultimate developments was the Order founded at the same date in Rome by St Joseph Calasanctius—the "Clerks Regular of the Pious Schools also called Piarists or Scolopians The work itself and the organization of male teachers living under vows pledged to carry it on grew out of an attempt to provide catechetical instruction in religious doctrine for the poor children of Rome To attain adequate results, some rudimentary secular education also was found to be necessary and the Order eventually aimed at providing free schools for the poor wherever maintenance could be counted on To this a certain modicum of secondary instruction in course of time was added

St Vincent de Paul. Before the French Revolution more than fifty different religious Orders or "congregations" under vows devoted mainly to the work of education had been founded in France alone Passing over such institutes as that of the "Filles de Notre Dame' begun in 1608 at Bordeaux by the Blessed Jeanne de Lestonnac niece of

Montaigne, who at her death in 1640 left forty flourishing houses to carry on her work or again the Daughters of the Cross' founded by Marie de Villeneuve in Picardy in 1625 at the instigation of St Vincent de Paul to provide elementary education in country districts or again the 'Sisters of the Presentation whom Marie Poussepin called into existence near Tours in 1684 we have two very widely known Orders of women belonging to the same period which are still active at the present time The first was the Visitation Order founded in 1610 by St Francis of Sales and St Jeanne de Chantal Already in 1641 the Visitation possessed eighty seven houses and in 1789 they numbered 7 000 nuns in France alone whose energies in great part were devoted to teaching Secondly St Vincent de Paul in 1633 through Mlle le Gras instituted the 'Sisters of Charity' (the famous White Cornettes) who first began to combine the instruction of children with the care of the sick poor at Fontainebleau in 1646 They spread rapidly and at the present day the total number of these 'swallows of Allah' as the Orientals picturesquely call them is over 25 000

La Salle However the most notable of the teaching Orders which came into existence in the seventeenth century was that of the Brothers of the Christian Schools founded in 1681 by St John Baptist de La Salle Not only was La Salle a fearless innovator who would not allow himself to be fettered by past traditions and routine methods but thanks to his energy and capacity for organization he was able to test his theories by practical experiment on a vast scale For that reason his *Conduite des Écoles Chrétiennes* an educational treatise written long before but only printed in 1720 the year after his death will always possess considerable value The writer s desire to appeal to the pupil s reasoning faculties his insistence on the collective as opposed to the individual method of teaching his use of questions his care for good discipline his protest against rough and hasty corporal punishment are striking features in the system The activities of the Brothers of the Christian Schools all over the world now embrace not only primary but secondary and technical education In 1904 when the more rigid application of the Associations Law drove them out of France the Brothers numbered nearly 20 000 with 2 019 schools and 326 000 pupils Since La Salle s time many other Orders of male teachers have come into existence most of them—after his example—either excluding or including only a small proportion of ordained priests Of these the best known are the 'Frères de l Instruction Chrétienne' or 'Petits Frères (Brittany 1817) the 'Joséphites (Belgium 1817) the Sacred Heart Brothers' (Lyons 1820) and the Salesians' (Turin 1859 founded by Don Bosco) There are also two congregations of Irish origin the "Christian Brothers' (Waterford 1802) and the Patrician Brothers (Tullow 1808)

Other Teaching Orders of Women The teaching Orders of women established in recent years are much more numerous Only a few can be named The 'Institute of the Blessed Virgin' founded by Mary Ward has a claim to notice because its foundress was an Englishwoman and because a community of the Order has resided continuously in York—the first convent settled on English soil after the Reformation—since 1686 In Germany these nuns are known as the 'Englische Fraulein' in Ireland and the Colonies as the 'Loretto Nuns" More important from an educational point of view, are the "Sisters of Notre Dame" founded in 1803 at Namur by Blessed Julie Billiart who conduct the very efficient Catholic Training College at Mount Pleasant Liverpool and whose activities cover a wide field in England Belgium, and America For pupils of a higher social status the schools of the 'Dames du Sacre Coeur' whose foundress, Blessed Sophie Barat (1779–1865) was a woman of very remarkable gifts have a great reputation With these may also be classed the "Holy Child" Nuns founded in England in 1840 by an American lady Cornelia Connelly Much of the teaching in the primary schools both of England and America is carried out by the 'Sisters of Mercy (Dublin 1827) the 'Faithful Companions (Amiens 1820) the Filles de la Sagesse" (Poitiers 1703) and the School Sisters of Notre Dame (a branch of the congregation of St Peter Fourier) To these may be added the 'Sisters of St Joseph founded at Le Puy in France by Père Médaille in 1650 the Canadian "Grey Nuns' who trace their origin to Mme d Youville at Montreal in 1738 and the various communities of the Sisters of the Holy Cross the American branches of which spread from Notre Dame Indiana in the first half of the last century But the number of such organizations often bearing similar names though quite independent of one another, is considerable

Education of the Afflicted It should be noted further that a large proportion of Catholic institutions for the education of the blind the deaf and dumb the mentally defective etc are under the care of members of religious Orders Thus in the establishment for the deaf and dumb at Cabra near Dublin the male section is administered by the Christian Brothers the female by Dominican nuns while the great blind asylum at Drumcondra is under the charge of the Carmelite Brothers In one case at least that of the 'Blind Sisters of St Paul (founded at Paris in 1852) in which half the members are themselves blind we have an Order wholly dedicated to a specialized function but as a rule some one community of an Order instituted with more general aims adapts their constitutions to fit the particular form of instruction which happens to be required of them

H T

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ROMAN CATHOLIC EDUCATION —(See CATHOLIC [ROMAN] SCHOOLS CATHOLIC [ROMAN] SECONDARY EDUCATION)

ROMAN EDUCATION —Omitting the shadowy period of the kings as we must needs do for lack of knowledge we may distinguish four main periods in the history of Roman education The first extends over five centuries of the Republic and ends about 250 B C During the second (*c* 250–100 B C) Greek influences began to modify the old methods In the third period the last century of the Republic and the first of the Empire the transformation is completed and Roman education and with it Roman

literature, reach their greatest height, we also find the beginnings of the endowment of education During the last period this is developed, and State organization of education introduced the Provinces, too, begin to play as prominent a part in education as Rome herself

First Five Centuries of the Republic We have no contemporary evidence regarding education at Rome during the first five centuries of the Republic What we know is gathered from later writers who cannot always be trusted Roman education was from the first essentially practical Boys learned those accomplishments which made them useful citizens *cf* Cic *de Rep* 1 20 33 *eas artes quae efficiant ut usui civitati simus* Bodily health and soundness of mind, piety towards the gods reverence for parents and country a knowledge of agricultural methods and ability to serve as a soldier and conduct public business were the requirements of a boy a girl was expected to acquire modest and industrious habits and learn household duties Children grew up to be like their parents Progress implying change was eyed askance The customs and traditions of the past *mos maiorum* were faithfully inculcated *Moribus antiquis res stat Romana virisque*, says Ennius (*Ann* 500, Vahlen) Hence there seemed to be no need for State control

The mother reared her child during its earlier years Tac *Dial* 28 *non in cella emptae nutrices sed gremio ac sinu matris educabatur* sometimes an elderly kinswoman helped Roman children amused themselves in much the same way as children do nowadays with tops dolls balls etc As they grew older the father began to help in their training But the mother s influence was still great and often remained so in after life as we see from the story of Coriolanus (Liv 2 40) she might even help the father in the children s education as in the case of Cornelia mother of the Gracchi From the age of about 7 a boy of the patrician class attended his father everywhere and learned from his father s example how to conduct himself in different circumstances He listened as his father gave his clients legal advice each morning he assisted him at sacrifices to the gods and was present when his elders discussed topics of the day or the great deeds of the past when his father was invited out to dinner he went with him and the diners were careful not to offend his young ears with unseemly language The sons of senators also accompanied their fathers to meetings of the Senate to become familiar as early as possible with the duties that awaited them when grown up The boys learned on the farm to till the ground and the girls were taught to manage the house The boys also received a thorough training in warlike exercises The arts in which the Romans always excelled were law agriculture and war, and it was for these arts that the Roman boy was prepared In addition to their physical and moral training the father also undertook the elementary intellectual education of his sons During the first period of the history of Roman education this would consist in little more than reading writing and arithmetic Even in later times this elementary teaching was undertaken by the father wherever possible As far as we know girls received the same elementary education as boys Schools seem to have existed from an early date at Rome and in the neighbouring towns Livy (3 44) tells us that it was on her way to school that Verginia was seized by the hireling of Appius Claudius Fathers would not always have sufficient time to give their children their whole education The rich might ask their friends to help or they might employ educated slaves for the purpose But in the case of the poorer citizens the need for elementary schools must have been felt, indeed Livy more than once mentions schools at this early period Such was the education of Roman children till about 250 B C Mommsen (*History of Rome* E T, I p 300) happily says of it This mode of educating youth was in truth one of those institutions of homely and almost unconscious wisdom which are as simple as they are profound But, amidst the admiration which it awakens we may not overlook the fact that it could only be carried out and was only carried out by the sacrifice of true individual culture and by complete renunciation of the equally charming and perilous gifts of the Muses

The Middle Period of the Republic The middle of the third century B C marks the beginning of a great change in the character of Roman education Their growing trade had brought the Romans into closer contact with the Greek colonies in Italy, and had compelled them to acquire a knowledge of the Greek language The increase in the number of Greek slaves in Rome helped to spread a familiarity with Greek It is now that we first hear of *grammatici* who taught children to write and speak Greek Originally their instruction was practical only but gradually a literary interest in the language grew up Livius Andronicus a Greek of Tarentum who was brought to Rome stimulated the new tendency by giving literary instruction both in private houses and in public classes a generation later Ennius followed the example of Livius (Suet *Gram* 1) Roman literature commences with Livius translation of the *Odyssey* about 250 B C This translation served the *grammatici* as a text book in Latin Livius also translated Greek plays. But owing to the poverty of Latin literature Greek authors were for a long time the chief means at the disposal of this new higher education The movement received additional impetus when Crates of Mallos an envoy of Attalus of Pergamum came to Rome about 169 B C He was detained in Rome by a broken leg and according to Suetonius (*Gram* 2) gave many lectures and discoursed diligently so that he served as a model for the Roman teachers to imitate " The new teaching had many enthusiastic supporters amongst them Aemilius Paullus, who brought many Greek manuscripts home from Greece and his son Scipio Africanus the younger It also had opponents particularly Cato the elder But though the Romans were gradually becoming familiar with Greek literature we have no evidence that any large proportion of the children studied it at school Most boys still had to be content with the old elementary education It was mostly in the comparatively few rich families where Greeks resided either as slaves or as friends (like Polybius in the house of Scipio) that boys became conversant with Greek literature and ideas in their school years Early in the second century B C, the first schools of rhetoric were opened For a long time the teaching was based on the Greek orators and rhetoricians Attempts to start schools of Latin rhetoric were repressed even as late as 92 B C when the two censors closed those schools at which rhetoric was taught in Latin as being " schools of impudence and " not in accordance with the *mos maiorum* ' The teaching of rhetoric in Greek seemed less subversive of old usages, and

the value of this training was generally acknowledged Those who wished to play a prominent part in public life or win distinction at the Bar felt the necessity of having some training in the art of speaking Eloquence was not a mere accomplishment with the Romans, it was the most practical help towards greatness and was valued most highly by such men as Cicero and Caesar

Late Republic and Early Empire During the last century of the Republic the transformation was completed The opposition to the new methods gradually disappeared among the upper classes With the lower classes however the higher education never became popular They were suspicious of what they could not afford to procure and felt that a wider gulf was opening between themselves and the more affluent classes The attainment of political distinction was dependent upon a good education in literature and rhetoric the lower classes being too poor to get such an education were effectually debarred from politics and culture

We have now reached a period for which we have much contemporary evidence It must however be remembered that our information is chiefly concerning the well to do classes we know little about the education of the poor

SCHOOLS AND METHODS Children were under the mother's control until they were about seven She would teach them to speak correctly and care for their moral training They frequently had Greek nurses and would learn from them to speak Greek at an early age At the age of 7 they began to go to school The ordinary Roman father during the classical period no longer had sufficient time to give his sons any regular education and even if the children of wealthier parents were still often instructed at home by an educated slave or a private tutor most of the citizens sent their children out to school The first school they attended was the *ludus litterarius* the master of which was called *litterator grammatista* or *ludi magister* The word *ludus* originally means a place for exercise so *ludus litterarius* is a place where exercise in letters is given The word *schola* used from Cicero's time on, meant at first philosophical discussion, then the place where such discussion was held hence it is only used of a place of higher education whereas the *ludus* is the elementary school The schoolroom was called *pergula* and was an open verandah in the front part of a dwelling house sheltered from the street by curtains In the *ludus* the children learned to read and write and do sums Writing was usually taught by guiding the pupil's hand over letters traced on wax tablets the scholars also wrote copies usually wise maxims as in our copy books Paper (*charta*) and ink (*atramentum*) were seldom used writing was done by means of a *stilus* on wax tablets (*tabulae ceratae*) Dictation and repetition formed an important part of this elementary education Correct pronunciation was insisted on The master first read out (*praelegere*) a passage which the class then repeated after him These schools were attended both by boys and by girls but it is not absolutely certain that the Romans had a system of co-education All we can say with confidence is that both boys and girls received the same elementary teaching

For the majority education probably ceased when they left the *litterator* Those whose fathers could afford it proceeded to the higher education of the *grammaticus* or *litteratus* This change of schools normally took place at the age of 11 or 12 and the pupils remained with the *grammaticus* till they assumed the *toga virilis* (usually at 16 though the legal age was 17) Here they received their instruction in literature Greek literature was usually taught before Latin, and this method is recommended by Quintilian (1 4 1) Sometimes there were different teachers for Latin and Greek, *grammatici Latini* and *Graeci* but often the same master taught both The greater part of the time was given to the study of poetry In Greek Homer was taken first then followed Hesiod the dramatists and the lyric poets In Latin during Republican times the older dramatists were read, under the Empire their place was taken by more recent poets Virgil Horace Lucan and Statius Besides teaching spelling pronunciation, and formal grammar the *grammaticus* was expected to explain difficulties of all kinds in the text studied He was required to have a knowledge of metre and rhythm astronomy philosophy mythology and history in order to be able to answer his pupils' questions Indeed, "grammar" concerned itself to some extent with practically every branch of learning Lectures were delivered on poetry and style The pupils also practised composition in prose and verse and large portions of the poets were learned by heart Instruction in music and dancing was given but these arts were never practised to any great extent and indeed it was generally considered unseemly for a Roman citizen to dance

After assuming the *toga virilis* the boy left the *grammaticus* for the school of the *rhetor*, there to receive the final training that was to enable him to play his part in public life Boys who were not to go on to the *rhetor* frequently received some elementary training in rhetoric from the *grammaticus* indeed the instruction given in the two schools often overlapped considerably But the pupils now learned to debate on set subjects, and the art of declamation was thoroughly practised The proper divisions and arrangement of a speech were taught Under the Empire declamations were divided into *suasoriae* and *controversiae* In the former the pupil was called upon to transport himself to the past and to urge a certain course of action upon some well known historical character the *controversiae* which were regarded as far more important, dealt with fictitious legal questions which were argued with all the seriousness of a genuine legal process The practice thus obtained together with the teacher's criticisms afforded a useful training in the arrangement of matter and ideas, but most of the themes were absurdly remote from reality and the constant cultivation of epigrammatic sayings and pointed phrases which was encouraged by most teachers produced a habit of distorted thought and vitiated the style both of prose and of poetry

After leaving the school of the *rhetor*, young Romans often went abroad to continue their training in rhetoric and to study philosophy Athens was the favourite resort but many other places were visited such as Rhodes and Alexandria The parents of many boys had Greek philosopher-friends staying at their homes and from them they would naturally pick up much philosophical knowledge The proper study of philosophy however could only be pursued abroad when school days were finished

ROMAN SCHOOLMASTERS When boys and girls started school they had a slave assigned to them, more particularly to conduct them safely to and

from school, but also to look after their manners and morals generally This attendant slave was known as a *paedagogus*, also called *custos comes*, *pedisequus*, and *rector* He frequently assisted in his charge's education, especially in the teaching of Greek Boys were under the constant surveillance of these guardians until they assumed the *toga virilis* Girls also remained under the care of their *paedagogus* (or occasionally of a female slave with similar duties) until they married which frequently occurred at the age of 12 or soon after

The schoolmasters were usually poorer Romans or foreigners who had settled at Rome or more often, enfranchised Greek slaves The discipline was strict Plautus (*Bacch* 433) says a slip in a single syllable will procure you a sound thrashing The instruments of punishment were the cane (*ferula* or *virga*) and the lash (*scutica*) Horace s schoolmaster Orbilius was noted as a man of blows (*plagosus*) But some used gentler methods Quintilian (1 3 14) disapproved of corporal punishment as being degrading Sometimes prizes were given to the best scholars in order to promote competition We are told (Suet *Gram* 17) that a rare book, *liber aliquis antiquus pulcher aut rarior* was given to the *victor* in the class by Verrius Flaccus the schoolmaster of Augustus s grandchildren

Schoolmasters were paid monthly on the Ides The amount varied Originally the fees took the form of gifts *Minervale munus* from the boys parents About 260 B C Spurius Carvilius seems to have set up the first school at which regular fees were charged But the custom was not universal in the first century B C we find Antonius Guipho leaving his remuneration to the generosity of the parents and he seems to have been well rewarded Elementary schoolmasters never earned much but clever *grammatici* and *rhetores* could amass small fortunes Remmius Palaemon earned 400 000 sesterces (over £3 000) a year

APPARATUS AND ORGANIZATION The furniture in the schools was plain The *grammaticus* and *rhetor* sat on a *cathedra* placed on a platform while their assistant if they had one occupied a chair on the floor The boys sat on benches but had no desks and rested their tablets on their knees when writing They stood up to recite Maps existed but we do not know if they were used in schools at this period Busts of famous authors adorned the schools of the *grammatici*

Lessons began early often before sunrise and in the winter the children came with lanterns There was an interval about midday for lunch (*prandium*) Rich boys had a slave called *capsarius* to carry their books but most children carried their satchels and tablets themselves *cf* Hor *Sat* 1 6 74 *Laevo suspensi loculos tabulamque lacerto*

Holidays were generous School was closed once every eight days on the *nundinae* (market days) There were holidays during all festivals such as the *Saturnalia* (in December) and the *Quinquatrus* (in March) As to the length of the summer holidays we have no conclusive evidence but in the country the boys were certainly free to help with the harvest and vintage

State Help for Education. The fourth and last period introduces us to a gradually increasing system of State-endowment and State-control of education Even in former times teachers had received special privileges Julius Caesar had given the franchise to all teachers of liberal arts Augustus excepted teachers when he banished all foreigners from Rome, he also gave Verrius Flaccus Catiline s house on the Palatine as a school But, as far as we know it was Vespasian who introduced the new principle when he endowed chairs of rhetoric at Rome with a stipend of 100 000 sesterces (£800) a year Quintilian was appointed to one of these professorships Hadrian built an *Athenaeum* at Rome as a school for literature Later emperors continued this policy both at Rome and in the Provinces, endowing chairs and granting other privileges The expenses were met sometimes by the emperor sometimes by the municipal treasuries Occasionally private individuals helped Pliny gave one third of the endowment for a school at Comum Trajan provided education for 5 000 poor children Alexander Severus instituted the first scholarships for poorer scholars As time went on the emperors took a more direct part in the control of the schools Julian, in A D 362 asserted the emperor's right to revise appointments and control the remuneration of teachers The last step in State control was taken in A D 425 when an edict of Theodosius put all education under the control of the Imperial government Theodosius also founded the University of Constantinople where he endowed chairs of Greek and Latin Grammar and Rhetoric, Philosophy and Law During the fourth century Gaul (especially Bordeaux) was famous for its schools and teachers The spirit of education however, underwent a change The absence of freedom in politics made the study of rhetoric still more hollow and superficial this reacted upon the schools of the *grammatici* who gradually ceased to teach Greek, once the most important means of education The pupils in the higher studies decreased in number until they were almost limited to the higher official classes

No account of Roman education however brief can be complete without some reference to Rome's greatest educationist Quintilian (*q v*) To appreciate him justly his great work the *Institutio Oratoria* should be studied G E K B

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ROMAN HISTORY, THE TEACHING OF.—Any one who has the curiosity to watch an average boy of 14 preparing a history lesson will notice that he

elaborately underlines every name of place or person every date as he proceeds The experience is seldom productive to himself but it should not be without fruit to his master It warns him of the danger of unnecessary names A boy has an ostrich like appetite for facts however stony The first principle therefore to be observed in teaching history to boys and girls of 14 to 16 is economy in facts Facts should be few carefully selected for their importance And this is all the more necessary in Roman history because the names mode of living atmosphere are all unfamiliar Hence follows a second principle—that no place or person should if possible be mentioned without some detail to fix it in the memory Take for instance the following passage from a school history of England For the use of Middle Forms by a distinguished scholar When Henry marched into the Marshal's earldom they surprised him at Grosmont November 11 and put him to disgraceful flight and twice beat his Captains at Monmouth November 25 and December 26 Following up these victories Llewellyn and Richard took and burned Shrewsbury in January and laying waste the lands of Peter and Stephen of Segrave drove the King from Gloucester to Winchester There are seventeen facts in these two sentences the boy's lesson will contain about ninety sentences and the number of facts he will attempt to commit to memory will be at this rate over 800 Again most of the facts in the above quotation are bare statements they have no roots flower or colour The first thing of necessity therefore is to make up one's mind what are the cardinal facts and to enforce these with plenty of detail Some school histories are like a picture of a town complete as in an ordnance survey containing every square street lane and public building but all of them so small as to be featureless and unrecognizable

What to Teach The central fact in Roman history is the development of Roman political ideas and government next in importance is the Roman character and the two act and interact on one another Keeping our eyes on the first we must dwell on the struggle for Italy the supreme contest with Carthage the first unwilling movements towards foreign annexation the final bid for universal empire Side by side with these we must emphasize the Roman idea of citizenship and watch how it shaped itself and grew through the struggle between the Patricians and the Plebeians through the Social War and the Civil Wars and how the Romans conciliated their subjects by sharing their privileges with them We shall observe how with success in government there went a weakness how unfit the Roman Republic was for the task of governing a world and how the constitutional struggles of the Gracchi of Marius and Sulla Pompey and Caesar led naturally to the overthrow of the Republic and the establishment of the Empire

All this time we must not forget the second great point of interest the Roman character we must trace its gradual deterioration and point out how the narrow virtues of the simple honest yeoman farmer broke down under the new temptation of power without responsibility how as was natural the upper classes most exposed to temptation and the chief objects of flattery and intrigue were most affected so that the Senate became full of venal luxurious incompetent self seekers how the failure of the Generals showed itself in the scandals of the Macedonian Spanish and Jugurthine wars how the mass of the people lost their lands and flocked to Rome to clamour for "Panem et circenses" or became professional soldiers deaf to any voice but that of a favourite general It will be well to focus attention in separate lessons on the growth of Rome from a city to an empire and on the services which in spite of all these drawbacks Rome has rendered to the world

How to Teach It It is difficult to bring home the meaning of all this to a young scholar because it has to be taught by means of unfamiliar symbols senate consuls pro-consuls tribunes comitia agrarian laws and so on So the first necessity is to make the learner realize what these strange terms mean This can only be done by comparison with more familiar things such as Parliament Cabinet Ministers of State The orthodox historian may look askance at such comparisons no doubt they are dangerous but it is imperative to make the history alive Roman history offers a peculiarly favourable field for such treatment the comparison between Roman and English methods of government forces itself at every turn The whole story gains infinitely in vividness by comparing for instance the Boers and French Canadians of our own history with the Gauls and Spaniards of theirs One must not of course take too much for granted Cabinet Parliament Constitution are terms which will themselves need explanation before Roman institutions can be explained by them but the intelligence will be quickened and the general significance of political changes be made clearer in the process and the student will have learned something of the meaning of history which he could never learn by a catalogue of bare facts however accurate Again existing knowledge of the New Testament will serve to illustrate Roman provincial administration

It is a small point but worth notice that nothing fixes a story or a character in the mind better than an epigrammatic phrase Cato's *Delenda est Carthago* the famous line of Ennius on the great *Cunctator* Jugurtha's A City for sale if she can find a purchaser' Octavian's *Vare redde legiones* remain amid the wreckage of memory serving as support to many half drowned facts

When we pass from the Lower School and Fifth Form to the Sixth the outlook widens The student can now discriminate between values—there is less danger of his failing to see the wood for the trees more detail therefore may be given the system for instance of provincial government may be studied constitutional questions may be dealt with more fully Most important of all the student will now it is hoped have some acquaintance with Latin poetry and prose This means that he may learn with profit more about Roman literature and may be invited to illustrate the knowledge given in his text book by passages from Cicero Livy and Tacitus This will put him in a position to appreciate the advanced teaching of the university

University Study The novelty in university teaching will lie chiefly in this that the text book will cease to be the student's main authority and its place be taken by the original sources The philosophy of Roman history and the results of skilled investigation he will find in Mommsen and others but his principal business will be to read carefully his Livy Cicero Sallust and Tacitus and form his picture of Rome and the Romans from their own account of themselves This will mean

personal study and the piecing together of hints from many sources—the grouping of scattered facts into one harmonious whole As one turns over the leaves of an old Oxford note-book one finds such headings as Informers Character of Tiberius ' The Stage with lists of passages the result of personal spade work collected from the *Annals* or Cicero s *Letters* The teacher should not do this work for the student but he will teach him what to look for The large number of inscriptions now available has added much to our original sources of knowledge The university student of Roman history has the advantage of reading the very words of the laws regulating municipal affairs in obscure townships of ancient Spain the inscriptions on tombs and funeral urns here a proud record of the victories of a charioteer of the ' Blue faction with his favourite black or chestnut horses from Saxony or Africa there an epitaph on two gladiators heroes of the spear and net who fell in the same combat and lie in the same grave here the praise of famous men inscribed by Augustus in his Forum there an oculist s prescription Very full of interest and often of deep significance these scraps from daily life—these pleasant trifles that mitigate the awful seriousness of the past—serve to fill out the picture of the Grandeur that was Rome

Roman history may well end with the completion of Rome s constitutional development at the death of Augustus On the other hand it seems a throwing away of the mercies to stop at the threshold of Tacitus from this point of view the death of Vespasian would make a better halting place A summary may be added of the chief events up to the Western Empire s downfall in A D 476

The picture before the eyes of the mature scholar may seem very different from the meagre outline with which the boy began but if the teaching has been wise the main subjects will still be those with which he started—the story of great experiments in government during its progress from a city to an empire by a nation singularly endowed with capacity for legislation and rule and the study of a great and peculiar type of national character in its strength and weakness its glory and its decline This continuity of outlook is perhaps the most essential feature in the successful teaching of Roman history E C E O

ROMANO-BRITISH EDUCATION —(See MEDIAEVAL EDUCATION)

ROMAN STUDIES, SOCIFTY FOR THE PROMOTION OF —Founded in 1910 this society works to further the study of the art history and archaeology of Rome Italy and the Roman Empire down to A D 700 It possesses a library and collection of lantern slides accessible to all its members and holds afternoon meetings for the reading of papers and the discussion of subjects of interest to the society

The *Journal of Roman Studies* is issued half yearly and supplied free to Members

ROME, ENGLISH SCHOOL AT —Mr W H Stevenson in his edition of Asser s *Life of King Alfred* (p 243) states that the *Schola Saxonum* at Rome was not a school in the educational sense ' but the body formed by the English Saxons dwelling in Rome on the lines of the regional *scholae* that is the later military organization of the Roman militia There were many great *scholae* of foreigners in Rome the oldest being those of the Greeks and Jews The Saxon school was apparently older than the Frisian Frankish and Lombard schools Mr Stevenson dismisses as unworthy of credence the statements of Roger of Wendover and Matthew Paris attributing the foundation to King Ine of Wessex or to King Offa of Mercia and the story that Peter s Pence was established for the maintenance of the school Heinsch (*Die Reiche der Angelsachsen zur Zeit Karls des Grossen* p 43 *et seq*) and Cardinal Gasquet (*A History of the Venerable English College Rome* 1920 p 8) ascribe the foundation to Ine A note added by Matthew Paris to his account which was unnoticed by Matthew of Westminster or whoever was the compiler of the *Flores Historiarum* states that Offa *restored* the school which had fallen into decay This explains William of Malmesbury s reference to Offa as the founder and perhaps strengthens the case for Ine as founder Matthew Paris states that Ine (727) built the House with the approval of Pope Gregory II in order that the kings of England and the royal family with the bishops and priests and clergy might come to it to be instructed in learning and in the Catholic faith No doubt the historical question is one of some doubt but Mr Stevenson s examination of the material seems to show conclusively that the ' school was not in origin at any rate an educational establishment Cardinal Gasquet admits that there was an English quarter in the ninth century inhabited by our countrymen in such numbers as to be able to furnish a quota of militia (p 14) Mr Stevenson states that the building was among the ruins of Nero s circus on the Vatican Hill and of the adjoining buildings and gardens The dwelling was called by the Saxons the burh a name which still survives in the Borgo the name of the main street in front of the church and hospital of Santo Spirito the famous hospital founded by Innocent III in 1204 on the site of the Saxon school Pope Alexander II (1066–1073) wrote to William the Conqueror that the English used to send a yearly pension to Rome part of which went to the Pope and part to the *Schola Anglorum* (Stevenson p 211) The school came to an end in 1204 but the Pope still claimed English support for the hospital and John granted the Church of Writtle in Essex for this purpose and allowed the brethren of the hospital to collect alms in England (Stevenson p 247) It would seem probable that there was some educational establishment attached to the Church in the English quarter for the children of English residents If so it may be that this led to misapprehension by Matthew Paris of the original meaning of the word *schola* in this connection J E G DE M

ROME, THE UNIVERSITY OF —The real founder of the Roman University was Bonifacio VIII though this institution had been preceded by the monastic school at Rome which Innocent IV, at the Council of Lyons in 1245 declared open and by the purely nominal foundation of a *Studium generale* by Charles I of Anjou in 1265

The *Studium urbis* open also to those who to Rome "de diversis mundi partibus confluunt ' (1303) was to be fixed at Rome and include every faculty It can scarcely be described as flourishing in its early stages indeed for a time it seems even to have been closed The ecclesiastical authorities

and the city magistrates took turns in administering the University, sometimes in agreement, more often in conflict At the end of the fourteenth century, the magistrates re-opened it, but without much success, later on, Innocent VII attempted to revive it Eugene IV granted special revenues and privileges to the "Archiginnasio"—by which name it was also known—whereas, later on even after the beneficent influence exercised by the Renaissance on its prosperity, the School was seriously injured by the reaction of suspicion against its liberties under Paul II In the sixteenth century a revival took place under the influence of Leo X, who reorganized the faculties, increased the number of professors and made provision for revenues and salaries During this period—at the beginning of the sixteenth century—distinguished men assembled there from Sadoleto to Bembo from Castiglione to Parisio After various vicissitudes, the School collapsed owing to the Sack of Rome in 1527 It revived with Paul III who was a patron of science as Leo X was of letters so that medicine for instance as illustrated by the great Eustachio, made notable progress there

The Sapienza. During this century the "Archi ginnasio" also began to be called as was then the custom "*Sapienza*' (School of Learning) Between the sixteenth and seventeenth century the Roman University flourished considerably notwithstanding the struggles between the Pope and the Senate of the city to preserve each for himself the dominant authority over the School Provision was made for discipline and regulations were drawn up dealing with the conferring of degrees and the holding of examinations Pius IV opened the new building But in the seventeenth century another decline began Sixtus V deprived the university of its autonomy making it wholly dependent on the *Curia* (episcopal court) Only the noble tradition of the medical and physical sciences was preserved by men like the Cisalpine G Maria Lancisi and the Abbé Castelli In spite of external progress (under Alexander VII the new building was inaugurated with the library still called after him 'Alexandrina') the life of the University waned while independent academies such as the *Cimento* (the experiment) and the *Lincei* (the lynx eyed) and the private school kept by the University teachers themselves prospered

Cardinal Gian Battista Spinola waged war against the latter removing many unjust privileges determining the duties of teachers and the number of chairs There followed the really important and liberal reform of Benedict XIV which made the Rector more independent of the Chancellor while the chairs were thrown open to competition the transference of readers from one chair to another more remunerative was forbidden new chairs were created (for instance that of chemistry) the *classes* (faculties) were increased from three to five (divinity jurisprudence medicine philosophy and the arts languages) and the Christian Museum the Mineralogical Museum and the Astronomical Observatory were instituted

An interval of depression or at least of difficulty characterized the system established with the French occupation which lasted with attempts at re organization from 1809 till 1814 The new order which lasted until 1870 was introduced by the Bull (or edict) *Quod Divina Sapientia* (1824) of Leo XII who instituted a *Congregatio Studiorum* outside the professors of the faculties imposed rigid discipline and suppressed almost entirely every academic liberty Pius IX claimed for the Pope the nomination of the Rector and gave absolute authority to the Cardinal Chancellor-in-Chief The schools for the most part, declined in vigour and in wealth, though this seemed to apply less to the School of Engineering instituted by Pius VII in 1817 Pellegrino Rossi introduced public and commercial law, but many subjects were neglected, while some such as political economy were even prohibited

Reconstitution and Present Form. After 1870 the Italian Government had a difficult task to accomplish in reconstituting the University Ten chairs were added at once and subsequently others in addition The Colleges of Doctors were replaced by the Faculties Casati's Public Education Act (1859) was extended to the Roman University the Engineering School was re-organized and enlarged new means of study were created scientific laboratories instituted due mainly to the great mathematician Senator Fr Brioschi The annual expenditure was at once more than trebled By the Act of 28th January, 1873 the Theological Faculty was abolished Development on a vast scale soon followed The "Palace of the Sapienza' to-day contains only a small part of the University Among its branches the "Policlinico' (the Clinical College) takes first rank This imposing edifice due to the initiative of the Minister Baccelli the distinguished surgeon who was responsible for the Act of 1881 was inaugurated in the scholastic year 1905–1906 The number of students is also an index to the development of the University In the decade from 1860 to 1870 the average number was 728 After 1870 there was a notable diminution for a few years then towards 1880 the number again began to increase uninterruptedly In 1888–1889 it was 1 495 in 1900–1901 it was 2 926 and in 1914–1915 it had risen to 4 597

The Roman University is one of the wealthiest foundations and scientific institutions Besides the School of Applied Engineering the first of its kind in Italy raised to the status of an autonomous institution by the Minister Scialoja (1873) there is (1) an Agrarian Department instituted in 1895 affiliated with the faculties of physical and natural science (2) a School of Archaeology founded in the first instance by the Minister Bonghi then affiliated to the University of Rome by the Minister De Sanctis in 1878 (3) Institute of Legal Procedure in connection with the faculty of law (4) a post-graduate course in the history of mediaeval and modern art (5) an Oriental School instituted in 1904 with several branches of study including that of the history of Christianity and of the history and languages of Abyssinia (6) a post graduate course in hygiene founded by Professor Angelo Celli in 1896 (7) a post graduate course in obstetrics and gynaecology (women's diseases) (8) a post-graduate course in pediatrics since 1908 (9) a Pedagogical Museum attached to the post graduate course for students with a diploma from the Normal Schools (instituted by the Act of 24th Dec 1904) and constituted partly with the funds of the former Museum of Education and Instruction founded by Ruggero Bonghi in 1873

The Alexandrine Library is extremely rich Students foundations are numerous The University of Rome is one of the most powerful organs of culture and science created by New Italy In the last fifty years distinguished men have rendered it

illustrious by their teaching from Cremona to Volterra in mathematical science from Mamiani to Ant Labriola Luigi Ferri Gentile Credaro and Varisco in philosophy and pedagogics from Cannizzaro to Blaserna in physical chemistry from Baccelli to Luciani and Durante in biology and medicine from Bonghi to Della Vedova Piccolomini Pais Guidi and Monaci in Guelfi Scialoja Salandra Schupfer Orlando and Luzzatti in law and economics G CALO

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ROMME —(See FRENCH REVOLUTION EDUCATION DURING THE)

ROOF GARDENS AND PLAYGROUNDS —The need for increased facilities for recreation and play for children living in large cities and the growing dangers of the streets have led to the adaptation of roof spaces as gardens and playgrounds Many schools in crowded cities are now provided with open roofs paved and furnished with ample protection from all risks of falling The same plan is adopted in New York where many school roofs are covered in with wire netting so as to allow of games requiring the use of a ball The large blocks of artisans dwellings and flats which have of late years become so numerous in London are usually provided with open space on the roof suitable for promenade or for play Some hotels and other large residential buildings in the West of London have adopted the same plan providing seats flower boxes and other attractions The increasing use of such playgrounds has beneficial effects on the health of children in providing more freshness and purity of air especially in the summer season

ROOPER, THOMAS GODOLPHIN (1847–1903) —Son of the Rector of Abbots Ripton Huntingdonshire was educated at Harrow and Balliol where without showing remarkable intellectual gifts he was greatly influenced by Dr Jowett T H Green and Bernard Bosanquet After being a private tutor for six years Rooper was appointed an Inspector of Schools in 1877 and worked successively in the Newcastle Bradford and Southampton districts dying unmarried at the last-named place

By writing and still more by personal influence he rendered the following specific services to Education—

1 He organized and financed the first classes for pupil teachers and ex pupil teachers

2 Kindergarten methods were introduced into English infants schools by him

3 He grasped the possibilities of manual training advocating especially "Slöjd"

4 He pressed for improved methods of teaching geography advising its correlation with history, as well as pointing out the importance of commencing near home and the advantages of practical work

5 School gardens received his encouragement in connection with the problem of rural education

6 He supported and worked for the Parents' National Educational Union

7 He helped in the foundation of Hartley University College Southampton

The cause of Education was felt to have sustained a great loss by the comparatively early death of Rooper and two memorial funds were raised With one a scholarship was founded to Hartley College Southampton and a tablet put up in the College building the other took the form of a Geography Prize at Bradford Grammar School Dr H M Butler just after Rooper's death speaks of him thus Among many friends scarcely one has lived a more fruitful and none a more beautiful life'

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ROSENKRANZ, JOHANN (1805–1879) —Born at Magdeburg and educated in German universities became a university teacher in 1831 and Professor of Philosophy at Konigsberg in 1833 He succeeded Kant and Herbart and as a teacher followed the lead of Hegel whose methods he applied to education and philosophy In 1848 he brought out his great work on education *Die Padagogic als System* (Pedagogics as a System) which has been translated since into English both in England and in America In this work he discusses the real meaning and aim of education and surveys educational methods of the past and their development to the present day Education he says is a process of development of the individual's inner nature, and a preparation for life It requires self activity and comprises training of body mind and will For the purposes of education work play and mental training must be combined Education must proceed in all phases of life in the home of the child in his school life in his religious life in his life as a citizen and in his occupation as a worker Rosenkranz also wrote works on *Hegel and His Philosophy* a *History of the Philosophy of Kant* and a *History of German Poetry*

ROSMINI, ANTONIO (1797–1855) —Born in the Italian Tyrol became a priest in 1821 made a deep study of theology and philosophy and planned an institution for the training of teachers and priests He visited Rome and gained the Pope's approval of his idea In 1830 he became famous throughout the Catholic world by his *New Essay on the Origin of Ideas* After several years of labour he obtained the formal approval of his "Institute of the Brethren of Charity" from Gregory XVI and proceeded with his work in spite of much opposition from the Jesuits who feared that his enterprise would endanger the supremacy of their Order In 1848 he published his *Constitution according to Social Justice* and shortly afterwards *The Five Wounds of Holy Church* Both works were condemned and prohibited by the Catholic authorities,

and Rosmini spent the rest of his life in devotion to his Institute and to the completion of his system of philosophy The Institute consisting chiefly of Italian and Englishmen still survives and includes some of the ablest and most devoted Catholics The brethren, who comprise both clerical and lay members undergo a two years' novitiate and take the three usual vows The Institute is a broad minded attempt to adapt Catholic monasticism and Christianity to the needs of the present age but has met with much opposition in the Church In England it has several foundations with a central House at St Etheldreda s Ely Place Holborn formerly the chapel of the town inn or house of the Bishops of Ely

ROSS, THE MAN OF —This name is given by Pope in his Moral Essay *On the Use of Riches* to John Kyrle who died at Ross Herefordshire in 1724 Pope attributed to him a vast number of charitable works such as the erection of churches and almshouses the relief of orphans the sick and the old and the provision of good roads and seats for travellers His income was only £500 a year and Johnson while criticizing Pope s praises of Kyrle says that Kyrle was a man of active benevolence by whose solicitations the wealthy were persuaded to pay contributions to his charitable schemes His own example was exerted to the utmost of his power so that he was able to give more than he had (See KYRLE SOCIETY)

ROSSALL SCHOOL —Three miles from Fleetwood and seven from Blackpool close to the sea in the healthiest and most bracing part of Lancashire Rossall School was founded in 1844 in imitation of the great public schools to provide at a moderate cost the best kind of secondary education for sons of the clergy and others It is a flourishing institution containing 300 boarders in nine houses There are 12 entrance and 8 leaving scholarships awarded annually The school was incorporated by Royal Charter and is managed by a council of twenty five members headed by Lord Derby the President There is a reduction of fees made in the case of clergymen s sons The school contains a classical side a modern side a preparatory school a special examination department a special mathematical class supplementary modern language classes (conversational) a science school with chemical and physical laboratories a music school and a drawing school The Rossall O T C was the first cadet corps enrolled by an English school There are societies devoted to debating natural history and photography and games are cultivated with great ardour The Great Playing Field contains 27 acres and other playing grounds cover 20 acres A carpenter s shop a gymnasium a covered sea water swimming bath, 8 fives courts and two racquet courts provide outlets for physical energies not fully expended at football and cricket There is a high standard of work and the annual list of university and professional honours is always a distinguished one

ROTHAMSTED, EXPERIMENTAL STATION — (See AGRICULTURAL SCHOOLS AND COLLEGES)

ROUND SHOULDERS IN SCHOOL CHILDREN —Round shoulders are due to abnormal forward curvature of the upper part of the spinal column This curvature is gentle not abrupt like that which occurs when one or more vertebrae are partly destroyed by disease In some instances the forward curvature is complicated by lateral curvatures as well

Causes Faulty attitude is the prime cause of roundness of shoulders but muscular debility—the result of chronic conditions of ill-health or of over rapid growth is an important accessory Slovenly postures if uncorrected tend to become stereotyped This is particularly the case at that period of life when the bones and cartilage of the skeleton are in a plastic state of growth a period which terminates only in the later years of school attendance

Common causes of bad posture are careless attitudes at home or in school defective eyesight and prolonged bending over badly designed or badly lighted desks when engaged in study or writing The scholar should sit squarely and symmetrically with muscles in perfect balance Improper suspension of clothing near the points of the shoulders causes a forward and downward drag Garments should be suspended from the base of the neck and not from the shoulder points The influence of respiration on posture is important Obstruction to breathing whether it be in the nose and throat from enlarged tonsils and adenoids or in the smaller air tubes as occurs in recurrent bronchitis and asthma sooner or later induces roundness of the shoulders and chest deformity Rounded and uneven shoulders with lateral curvature may constitute only part of the disability Contraction of the chest which accompanies the rounded back interferes with respiration and retards the circulation of the blood it also hampers the activities of the digestive viscera in the abdomen and so perpetuates a vicious circle of ill health

Simple Treatment The absence of nasal or respiratory obstruction should be assured Errors of refraction should be corrected and any cause of chronic ill health attended to Then physical drill breathing exercises in pure fresh air a proper regulation of school hours and of the time devoted to the different school tasks with avoidance of over fatigue are the appropriate methods of dealing with the simple forms of deformity In girls about the age of puberty a lateral curvature of the spine may occur One shoulder blade drops and grows out and a stooping attitude with complaint of pain in the back may be expected The dorsal part of the spine shows a lateral bend usually to the right and a compensatory bend in the reverse direction may appear at the lower part of the column The causes are in the main those already indicated above and the treatment is similar

Two other diseases characterized by shoulder deformity need mention The most serious is angular curvature of the spine due to destruction of vertebral bodies by caries In advanced cases this induces the deformity known as hunch back The disease is tuberculous and proper surgical treatment is urgent The other is paralysis of certain muscles which control and support the spine This again is not amenable to the simple measures indicated above it needs skilled medical supervision C R B

ROUSSEAU AS AN EDUCATIONIST — Rousseau s views on education grew out of his discontent with the whole social order of his times Unhappy himself he saw man ' everywhere in chains ' oppressed and perverted by the conventions and laws of modern society and he set himself

with all the intensity of a somewhat neurotic mind to think out the conditions under which the individual might hope for freedom to develop his real nature as a man The educational problem, to which his attention had been first called by reading Locke's *Thoughts on Education* presented itself to him as a fundamental part of this wider problem If ordinary social life was inimical to individuality it followed that the education of home and school which prepared children to take their place in it was at the bottom of the evil and that there could be no substantial reform without drastic changes in education But such changes he saw presupposed changes equally drastic in the constitution of society An ideal education is possible only in an ideal community

From his childhood Rousseau had been a diligent reader of Plutarch and had learned to admire the education given in Sparta and the other city states of Greece He had before him too the similar case of his native town of Geneva where it seemed to him men had found it possible to combine civic devotion with a free self-respecting life as they did nowhere else in Europe In the article on Political Economy in the *Encyclopédie* (1755), he advocated a system of education much like that of Sparta which would transfer the child from the family to the state and produce in him such com plete sympathy with the national spirit that there would be no opposition between his own will and the 'general will of the community The same idea underlay the proposals he made in 1773 for the reconstruction of Poland on the lines of his *Social Contract* Poland he said could be saved only by training the young Poles to be true patriots An education that inspired them with a love of country by acquainting them with the great deeds of their ancestors and cultivated a desire for com mon action by instituting compulsory public games for the children would not only enable every citizen to live his own best life but would guarantee national stability as nothing else could

But though national education modelled on Sparta and Geneva was Rousseau s ideal he did not think it capable of realization in the great nation states of Europe In the world as it is he says quite frankly in the *Émile* the educator must choose whether he is going to make a man or a citizen he cannot do both For himself he has no doubt about which is the more important under existing conditions He will make the man and leave him to fit himself as best he can into relations with his fellows when he grows up But what is implied in the making of a man ? Not as Helvetius and others of Locke s disciples thought the imposi tion of adult characters on the child in accordance with some doctrinaire plan of instruction Rousseau had learned enough biology from his study of Buffon to know that the child's mind is not a *tabula rasa* on which the educator can imprint what he wishes On the contrary every child has from the beginning a nature of his own manifesting itself in dispositions or impulses to action—some of them common to mankind others varying accord ing to sex age and individual bent The only right way to educate any child in Rousseau's opinion is to begin by carefully studying this nature and then provide opportunities for activity which will call all its powers into full play

The "Émile" This idea of an education in conformity with the child s nature is worked out in detail in the *Émile* (1762) the great seminal book of modern education The main characters of the story are a wise tutor (Rousseau himself) and the boy Émile whom he takes away from his home to the rustic seclusion of a village The tutor and the special conditions under which the boy's education take place are not essential elements in the plan of education propounded The central fact is the method of education, which begins by taking account of the characteristic features of every stage of boyhood and youth, and allows a wisely regulated freedom for self development Rousseau distinguishes four periods up to manhood The first is infancy up to the age of 2, when the child learns to eat, walk, and talk under the impul sion of innate activities which need only to be guarded from the extremes of neglect and over indulgence to produce the required result The second period is boyhood from 2 to 12 This is a time of unrestricted play during which the boy gradually acquires the mastery of the five senses, and becomes acquainted with the world imme diately around him As yet there is no conscious ness of social obligation and no understanding of social facts such as is required for the study of history and literature The self regarding passions rule his life and conduct is determined only by the hard law of necessity which brings the con sequences of misdeeds home to the evil doer by their painful results The third period is pre-adolescence from 12 to 15 The puberal crisis that will change the boy into the man is foreshadowed by a quickening of intellect which turns the physical activities of boyhood into intellectual channels and awakens a consciousness of the future Utility is now the guiding principle of life, and under its prompting the lad plays seriously at the game of Robinson Crusoe and studies the sciences of the pressing facts of life (geography physics, and astronomy) by the method of personal discovery Finally about 15 comes the period of adolescence, bringing with it a transformation of the whole being The other regarding impulses intimately connected with sex and developing healthily only when sex is kept in proper check, now make him conscious of his kinship with all mankind and he comes to a personal understanding not only of social relations but also of art literature, and religion After he has learned to control his pas sions and has studied the ways of men in the pages of history he goes out into the world to find a mate (whose education for a rather narrow domestic ity is given in the last Book of the *Émile*), and to learn the duties of neighbourliness and good citizenship

Theories of Education The *Émile* it will be seen is concerned primarily with the individual factors in education and especially with the significance of the differences made by age The concentration of attention on this aspect of the subject in conjunction with the misleading implica tions of the story framework of the book, some what obscures the great importance attached by Rousseau to the home as the fundamental institu tion for the best education under modern condi tions The complementary view of education, as a preparation for society through participation in the ordinary life of a good family is presented effectively in the Letter on education in the *Nouvelle Héloïse* (V 3) which was written about the same time and from the same point of view as the *Émile* There education is shown to be not only an individual, but a social process, and the

opposition between child and society receives a partial reconciliation, which prepares the way for a more complete reconciliation in the subsequent development of Rousseau's doctrines

It will be seen that Rousseau has not given a complete view of education in any of his writings What he has given is a number of detached expositions from different points of view any one of which presents his conception of education in a one-sided and misleading way The articles on "Political Economy" and the "Government of Poland treat of the educational functions of the community in the spirit of an abstract socialism that fails to do justice to the individuals who undergo education the Letter in the *Nouvelle Héloïse* and the *Émile* deal with the process of individual training in the spirit of an abstract individualism that minimizes the significance of social influences on personal development

This one sidedness is most evident in the *Émile* because the fullness with which the subject is treated there gives an illusory sense of completeness In his eagerness to emphasize the necessity for freedom from merely external constraints as a condition of the orderly growth of innate powers Rousseau represents the boy Émile as coming to manhood outside the ordinary social relationships as though the child began as a creature of Nature devoid of reason and conscience and only entered into the spiritual life of humanity at a later stage The view which underlies this educational scheme is a strange mixture of truth and error The difference between child and adult is not absolute it is only by beginning with social experiences however imperfectly comprehended that the child can ever become a social being at all The real opposition is that between the natural and the social factors in education and Rousseau is right in holding that the former are more important in early life

In spite of the defects of much of his work—its sentimentality its lack of the historic sense its crude psychology its exaggerations and eccentricities—his essential ideas have exerted a tremendous influence on education and have not yet wholly spent their force There is still much to be learned from him that can be learned from no other teacher

W BOYD

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ROWING, AND HOW IT SHOULD BE TAUGHT

—The part which rowing has played in the world's history has perhaps not been sufficiently recognized It was the oar that carried Art Letters and Civilization round the coasts of the Mediterranean Sea and the prizes of nations skilled in its use have been principalities and empires and wealth beyond the dreams of avarice

The use of the paddle no doubt preceded that of the oar Some of the oldest pictorial monuments of Egypt which date from about 2500 B C show boats with oars, with some of the crew paddling with their faces towards the bow while others are rowing with their faces towards the stern The artist may have mixed up the two methods of propulsion through being more accustomed to the idea of paddling than rowing, or copying some earlier design, or he may have mechanically followed the turn of the hieroglyph and paddling in large vessels may have ceased even before 2500 B C There are, indeed records cut in limestone, belonging to the 6th Dynasty, which represent a boat being rowed by oarsmen as long ago as 3700 B C

Later we have the Phoenician Grecian Roman, Venetian and Northern European rowing systems all with distinctive features of their own It is interesting to note that starting from the Homeric ship with its single bank of oars one goes through a period of many centuries of ships with many banks of oars till one comes back again to the single bank used by the Norsemen Danes and Saxons

It is one of the problems of rowing to explain how the oars in the many banked ship were effectively used and how the long oars and the short oars kept time with each other The method of rowing the trireme can indeed be worked out When the ship of many banks is considered it is difficult to see how the man power required could be worked with economy We are told that ships with fifteen banks of oars were common in the fleets of Ptolemy and Demetrius and Plutarch vouches for a ship of sixteen banks These wonders are however left far behind by the ships of thirty and forty banks of oars ascribed to Ptolemy Philadelphus and Ptolemy Philopator of one of which Athenaeus gives a long and detailed description According to him there were 4 000 rowers on this ship 100 on each bank If one allows only 1 ft between successive banks the top oars must have been 60 ft long how they kept time with the 7 ft oars of the lowest tier is not stated

The Athenian trireme was a finely proportioned and swift vessel Her crew was composed of free men and all Athenians could row The pace attained seems from records of speedy voyages to have been 10 miles an hour The training of the crews was very strict

The Athenians and subsequently the Carthaginians depended for success in naval engagements on their skill with the oar their rapid manoeuvring and the power of the ram The Romans however who held control of the Mediterranean for so many centuries were no seamen in that sense but from their mighty floating towers poured Greek fire and every kind of missile upon their antagonists to say nothing of baskets full of live scorpions and snakes

Mechanical propulsion has ousted the oar from its old high function on the sea rowing is now more of a pastime than a serious necessity and its records are chiefly concerned with racing rowing which has a literature of its own

Racing-rowing is a fine art and cannot be imparted unless the teacher has had many years of practical experience Notwithstanding the many improvements in boats and the accessories of rowing the principles remain the same even the adoption of the sliding seat has not altered them

In 1855 the first keel less boat made its appearance at Henley Regatta That event and the introduction and gradual lengthening of the slide have had the greatest effect on racing rowing in modern times But the rowing coach will do well to impart all his first instructions still on the fixed seat as neither the slide nor the keel less boat has altered the fundamental principles of rowing though they have emphasized the necessity of finished oarsmanship as compared with mere strength

The duties of the coach are twofold he has to deal with the crew collectively, and he has to deal with each member individually He should begin by coaching the individual, which is best done by taking him out in a tub pair, not only telling him what should be done but showing him how to do it

The position of the body is the first thing to teach There must be no stiffness and every means of saving unnecessary exertion should be studied The body must swing from the hips in an easy natural manner The feet should be firmly placed against the stretcher and the body swung forward but not the shoulders to its greatest possible extent the idea being that it should be used like a spring from the stretcher the whole weight being flung on to the handle of the oar at the correct moment There should be no stiffness in any part of the body and no tight grasping of the oar

Perhaps the two most difficult things are the beginning and the finish of the stroke the sharp rise of the hands over the stretcher so as to catch hold at once of the water behind the rigger and then the finish when the hands are dropped smartly so as to bring out the blades square from the water and avoid what is called feathering under water

It is important to insist that the body should move backwards and forwards in the same vertical plane to see that all the muscles are made to perform their proper portion of the work and to teach that the sliding seat prolongs the stroke but does not alter it

The sliding seat was anticipated by certain professional scullers such as Coombes and Chambers who slid on their fixed seats which they polished with black lead But they did not sacrifice body work for leg work and the two must be combined It should be remembered that the weight of the body is always in the boat and should be used to the fullest advantage

Coaching a Crew When the coach has to train a crew collectively he will meet with many difficulties The crew is composed of individuals who vary in stamina in the amount of work they need and in individual proficiency and it is not easy to apportion the work which has to be done

What the coach will strive for is the perfect rhythm which sometimes comes to a crew like an inspiration and then the boat seems to go by herself The rightly constructed boat has a harmonic note of her own and this note has to be sought and found

The main objects of the coach are first to see that each member of the crew is doing his best to propel the boat towards her goal and secondly that he is doing nothing to impede her Feathering under water which stops the way of the boat and in many cases causes it to roll is the great fault The University Course at Putney takes say 20 min to row and the crew row 36 strokes a minute They will take 720 strokes over the course and if a member of the crew by feathering under water or committing some other rowing enormity injures the pace to the extent of 1 in a stroke there will be a loss of 60 ft or a boat's length over the course which has been on more than one occasion enough to lose the race D

ROYAL AIR FORCE, EDUCATION IN THE — At present this falls under two main heads—(1) the special education of candidates for commissions in the Royal Air Force whose intention it is to follow this as their permanent profession (2) the training of boy mechanics in certain trades or occupations with the twofold purpose of making them efficient workmen during their service with the Air Force and of fitting them to earn a livelihood on their return to civilian life Arrangements have also been made for the higher technical education of officers by means of courses held at Cambridge and at other Universities It is understood to be the intention to provide educational facilities for officers and men in all service units Such a scheme would include instruction in Mathematics Science and Mechanical Drawing similar to that given in a Technical School or College and also general education such as can be obtained in evening classes for adults under a local Education Authority and in University Tutorial Courses

The training of cadets provisionally accepted for commissions is conducted at the Royal Air Force (Cadet) College Cranwell in Lincolnshire which corresponds to the military institutions of Woolwich and Sandhurst Candidates must be as a rule between the ages of 17½ and 19 years and have to pass a somewhat rigorous test as to physical fitness There are three methods of admission (1) to successful competitors at the Royal Air Force Entrance Examination (2) to King s Cadets and Honorary King s Cadets (these are appointed by the Secretary of State for Air, usually from sons of officers of the Crown Forces who have been killed in action or have died of wounds) (3) to special nominees of the Air Council (a very limited number of such nominations are made on the recommendations of the head masters of certain public schools) The entrance examination is conducted by the Civil Service Commissioners the fee being £4 if the examination be held in London and £5 at any other centre The examination is the same as that for entrance to the Royal Military College the Royal Military Academy and a cadetship in the Royal Navy but the subjects prescribed vary For entrance to the R A F College obligatory subjects are English English History and Geography Elementary Mathematics and one of the following Modern Languages—French Spanish Russian Italian Arabic Hindustani The optional subjects of which not more than three may be taken are Latin Greek a second Modern Language Intermediate Mathematics Higher Mathematics Physics and Chemistry and Elementary Engineering All candidates may also take the additional subject of Freehand drawing A number of prize cadetships are awarded to successful competitors in order of merit These entitle the holders to certain pecuniary privileges including admission at the lowest annual fee of £20 and a remission of the deposit sums usually paid for uniform and books

Instruction of Cadets The normal course of instruction extends over two years during which examinations are held periodically The aggregates of marks awarded to cadets on these tests determine their places in the order of merit when they pass out for appointment to commissions The following are the groups of subjects taken—

1 HUMANIST SUBJECTS English Language and Literature General History

2 MATHEMATICS AND SCIENCE Practical Mathematics Graphics Applied Mechanics and Elements of Drawing General Science

3 WIRELESS AND AERONAUTICAL ENGINEERING Workshops and Engines Theory of Flight

Carpentry and Rigging Wireless Telegraphy and Morse

4 GENERAL SERVICE SUBJECTS History and Organization of the Royal Air Force Organization of Army Organization of Navy Law and Administration Sanitation and Hygiene Armament Meteorology

5 AVIATION AND AERONAUTICS Air Pilotage and Map Reading Practical Flying Airmanship Reconnaissance Reports and Observers Training

6 DRILL DISCIPLINE AND GENERAL EFFICIENCY

The annual fees range from £75 in the case of the son of a private gentleman through decreasing amounts which are determined by the Naval Military or Air service of the cadet's father and by other circumstances to £20 In addition to the foregoing fees the amounts payable for books and uniform will be £80 on first joining and £20 at the commencement of the second year Cadets are credited with pay of 5s a day from the date of their entry to the College until they commence their last year's course when the amount is increased to 10s There is also a further allowance of 1s a day Against this are charged their messing washing recreation library and other incidental expenses King's Cadets are granted an educational allowance of £40 a year and are not charged fees All cadets receive the grant of £65 towards first cost of outfit

Training of Boy Mechanics To be eligible for entry boys should have received a good general education such as will form a good foundation for the course of further general and technical training during their apprenticeship The age limits are normally 15 and 16½ years of age Entry may be made by three systems (*a*) open competition (*b*) restricted competition among candidates nominated by a local Education Authority by an Advisory Committee for Juvenile Employment or by the governing body of certain schools and associations privileged by the Air Council to make such nominations (*c*) nomination by the Air Council subject to passing a qualifying test only (These nominations are restricted to the sons of commissioned officers warrant officers and N C O s of and above the rank of sergeant who have at any time served in H M Forces)

In the case of a boy who has attended at a public elementary school application should be made on his leaving to the local Advisory Committee for Juvenile Employment so that arrangements may be made for him to attend at continuation classes in order to reach the required standard of education for entry Where a boy has been at a Secondary School or any other school of higher education under a local Education Authority application for a nomination should be made to the Authority for higher education of his district In case of doubt as to the proper authority to approach the boy's headmaster should be consulted If the school of higher education of which the boy has been a pupil is not under a local Education Authority and is represented on the Headmasters Association application for nomination should be made to the headmaster The Boy Scout Association has the privilege in certain cases of nominating its boy members on application If a nomination cannot be obtained permission to sit at the open competitive examinations should be applied for from the Civil Service Commission

Nominations are accepted on the understanding that the nominee is certified by the nominating authority to be specially suitable in regard to character educational attainments physical fitness and bent of mind for training as a boy mechanic in the R A F also that the nominating authority is willing to hold the examination for nominated candidates Nominations must be submitted on the appropriate forms which are supplied only to nominating authorities and not to individuals Candidates must not have applied to any other nominating authority for nomination for the examination in question Examinations for boys nominated by local authorities are held in July and December of each year The examinations for entry by open competition are held in May and November There are papers in Mathematics (in which stress is laid on skill and accuracy in the use of instruments) Experimental Science English Competition and a General Paper to test the candidate's all round knowledge The period of service for which boy mechanics originally attest is twelve years ten of these being in the Regular Air Force and two in the Reserve At the end of nine years they may apply for permission to re engage in order to qualify for a pension the minimum of requirement for which is twenty four years service

All accepted candidates receive a three years apprenticeship training For the first few months all receive a common training after which a provisional selection is made for training in the several trades and occupations The parent or guardian of each successful candidate will be supplied with a form on which to indicate the trade he would prefer the boy to follow This form shows also the number of vacancies open in each of the several trades This selection is guided as far as possible by this expression of preference the claims of each boy being considered in the order of his place on the result list of the entry examination The needs of the Service must of course receive the first consideration and no guarantee can be given that any boy will be assigned to a particular trade Special consideration is given to those boys who have gone through a suitable course of preliminary training in the trade of their choice for not less than twelve months before entering at a Technical or a Junior Technical School or similar institution The usual distribution of time spent weekly at the various subjects is approximately eighteen hours at workshops eight hours at school and nine hours at physical training organized games and drill All boys must aim at qualifying for a trade and those who fail to make satisfactory progress are liable to be discharged

Vocational Training In addition to receiving a course of general education that includes English Civics Practical Mathematics Applied Mathematics Mechanical Drawing and General Science all apprentices receive vocational training in the following skilled trades—

TECHNICAL GROUP I Blacksmith Carpenter (various classes—*boat builder motor body builder propeller maker rigger*) Pattern maker Coppersmith Draughtsman Electrician (*compass setter and repairer*) Fitter (various classes—*aero-engine general M T hydrogen worker drivers armourer millwright jig and tool maker torpedo*) Instrument Maker Moulder Turner Wireless Operator (*mechanic*)

Those who qualify after their three years course

in one of the above skilled trades are promoted to be leading aircraftmen commencing at 5s 6d a day Those who fail in the final examination or at any of the occasional tests may (if not discharged) be graded as aircraftmen I or II in Group I or II If placed in Group II they are eligible for regrading into Group I subject to passing the requisite trade test

TECHNICAL GROUP II Acetylene Welder Balloon Basket Maker Instrument Repairer Electrician Machinist Carpenter Wireless Operator Coach Painter Photographer Rigger (*aeo*) Rigger (*airship*) Sheet Metal Worker Tinsmith

The rates of pay applicable to the trades and occupations in Group I are rather higher than those for Group II

Boys of exceptional promise may be selected on the completion of their three years' training for a more advanced course From such selected boys at the conclusion of the advanced course the most successful may be offered cadetships at the Royal Air Force Cadet College where they take the ordinary course of training Commissioned rank is also open to others who by their meritorious service in the ranks prove themselves suitable

Training Centres and Staff The training centres for boy mechanics are at present those at Cranwell near Sleaford Halton near Wendover and Flowerdown near Winchester The workshop and technical training are given by Air Force personnel while the general educational subjects are taught by the civilian educational staff Candidates for appointment to this latter body must possess a University Degree or equivalent qualification The grading of the civilian educational staff with approximate scales of salary is as follows—

	£	Basic Scale £	Approximate rate with current bonus £
Grade I		450–20–550	746–891
Grade II	250–10	300–15–450	456–746
Grade III	150–10	200–15–350	303–601

Bonus is calculated on the Civil Service scheme and is variable according to fluctuations in the cost of living There is a decrease or increase of $\frac{1}{24}$ of total bonus for a fall or rise of 5 points in the cost of living In filling posts in a higher grade selection is usually made from members of the staff in the grade below but where circumstances seem to warrant it a vacancy may be filled from outside the Service There is a scheme of deferred pay in lieu of pension for those who complete three or more years of service

University Courses for R A F Officers In order to afford R A F officers facilities for advanced technical studies arrangements have been made for a limited number of officers to attend certain courses at the principal Universities The main object of these courses is to enable officers to qualify for technical duties in engineering wireless navigation research and other branches The courses at present arranged for are as follows—

(*a*) SPECIAL COURSE IN ENGINEERING SUBJECTS AT CAMBRIDGE UNIVERSITY This course is intended to give officers who are specializing in engineering the necessary theoretical knowledge before taking practical engineering at a Royal Air Force establishment The syllabus covers six full University terms and includes Practical Mathematics Applied Mechanics and Properties of Materials Electricity, and the other Science Subjects all treated with special reference to Aeronautics

(*b*) POST GRADUATE ENGINEERING COURSE AT THE IMPERIAL COLLEGE OF SCIENCE AND TECHNOLOGY This course known as "Design and Engineering is intended for the higher technical education of officers who show aptitude and progress in the study of Aeronautical Engineering It extends over a period of three college terms

(*c*) SPECIAL COURSE IN AERONAUTICAL RESEARCH This course is held at the Imperial College of Science and Technology and is the most advanced both technically and educationally It is intended for the special training of a few officers possessing exceptional qualifications for Aeronautical Research

(*d*) COURSES IN MATHEMATICS AND KINDRED SUBJECTS AT UNIVERSITIES IN THE UNITED KINGDOM These have been instituted to enable officers to obtain a knowledge of Mathematics Science and Physics sufficient to qualify them for admission to one of the R A F schools of instruction for specialization in subjects of a technical character Officers may choose the university at which they wish to take the course which is not longer than four terms

While attending the above courses officers receive full pay and all allowances of their rank, themselves paying all personal expenses Officers taking Course D must also pay all University and other fees and those taking course 'B' are required to contribute £20 towards the fee payable to the College they join

Early Education in the R.A F. Proposals to institute systematic educational courses in the Royal Air Force were first put forward in August 1918 and Treasury sanction covering the scheme was obtained in the following November A census taken of the educational requirements of the Royal Air Force serving in France resulted in the completion of more than 30 000 forms Of these about 16 000 asked for instruction in one or more subjects while over 3 000 applicants desired to work through some prescribed course such as that leading to a degree or diploma On the teaching side about 1 000 offers to give voluntary instruction were received

In November 1918 the scheme was extended to the home areas and the main objects were then defined under the two following headings—

(*a*) To give officers and men facilities to prepare themselves for a career in civil life or to take up again the courses of preparation they were engaged upon before joining the Forces

(*b*) 'To arouse interest and a desire for study, to broaden outlook and to bring home to officers and men the realization of the greatness and possibilities of the empire and of their own duties as citizens"

The courses of instruction covered a wide field, and as in the case of those held under the Army Education Scheme were not confined to what are usually considered as educational subjects," but included an extensive range of vocational subjects such as Carpentry Farming Motor Engineering Mechanical Training Architecture Photography and Cinema, and the like While the aims of both schemes that of the Air Force and that of the Army were greatly similar they have developed along somewhat different lines To meet the special circumstances and needs of the R A F personnel which was usually scattered and on the whole kept much more systematically occupied

than the personnel of the Army, a system of decentralization was adopted, as well as of individual treatment coupled with the necessary amount of central control to ensure unity of action in regard to essential matters An Educational section under a deputy director was set up in the Directorate of Training at the Air Ministry to be generally responsible for the organization For each Home Area Command a staff officer (third class) was appointed to organize, under the General Officer Commanding the educational work within the area assisted by an education officer (administrative) in each group of the area In France a staff officer (second class) was attached for organization of education to the staff of the General Officer Commanding R A F in the Field he was assisted by a staff officer (third class) while an education officer (administrative) was allotted to each brigade and large depôt These officers were given wide discretion in making such arrangements with the approval of the General Officer Commanding as seemed most likely to meet the special circumstances of the command and individual needs of units

In view of the strongly individualistic organization of the Air Force it was decided by those responsible for the scheme boldly to adopt the policy of letting the responsibility for discovering and dealing with the individual needs of each unit and each man rest with the education officer concerned in preference to the alternative of adhering to a hard and fast programme of approved courses " of study and more or less rigid syllabuses of instruction According to this policy education officers were at full liberty to ask for any text book they felt was best suited for any individual student In the home commands when the instructional resources proved inadequate for any particular purpose the area education officer on being notified was empowered to make suitable arrangements with the local Education Authority or to hire the services of a civilian teacher In some cases, indeed recourse was had to a suitable course of correspondence tuition

At a very early stage in the development of the scheme co operation was well established with other Government Departments such as the War Office (S D 8) the Appointments Board of the Ministry of Labour the Board of Education and the Ministries of Reconstruction and Pensions as well as with certain outside bodies interested in similar problems such as the Y M C A who were always most ready to place their very considerable resources unreservedly at the disposal of the Royal Air Force as well as of the Army

References—

Provisional Regulations for admission to the Royal Air Force (Cadet) College, Cranwell
Regulations in regard to the Entry and Training of Boy Mechanics, Royal Air Force
Report of Adult Education Committee

ROYAL AGRICULTURAL COLLEGE, CIRENCESTER. — (See AGRICULTURAL SCHOOLS AND COLLEGES)

ROYAL BOTANIC SOCIETY OF LONDON — Incorporated by Royal Charter in 1839 the Society has endeavoured to promote Botany in all its branches, and its application to Medicine Arts and Manufactures Special provision for scientific and educational purposes is made in the extensive botanical and ornamental gardens in Regents Park which are held under a Crown lease

Many colleges and schools send students to study in these gardens and parties of pupils from elementary schools attend on arranged days Very valuable collections of rare plants are kept and specimens are supplied to inventors and persons engaged in research work Cut specimens of plants are also supplied to hospitals and other institutions for lecture purposes and to artists and art students A practical gardening school was formed in 1897 and a three years course of gardening is given The gardens are recognized as a meteorological station for London

Members and Fellows of the Society are elected by ballot and its affairs are managed by a council elected from the Fellows

ROYAL COLLEGE OF SCIENCE, DUBLIN — (See IRELAND THE NATIONAL UNIVERSITY OF)

ROYAL COLONIAL INSTITUTE —(See COLONIAL INSTITUTE ROYAL)

ROYAL INSTITUTE OF BRITISH ARCHITECTS, THE — This was founded in 1834 incorporated under William IV in 1837 and re incorporated in 1887 (Victoria) and 1909 (Edward VII) It is the chief British architectural body

In connection with the Institute is the Architectural Association founded in 1847 for the purpose of giving instruction in architectural knowledge to persons being trained in offices where pupils are taken It prepares students for the examinations of the Royal Institute and also awards its own medals and certificates

The Royal Institute holds twice a year examinations in three grades Preliminary Intermediate and Final Until June 1915 the Preliminary Examination included eight subjects and the standard was about equal to that of a University Matriculation examination Since that date papers in (*a*) geometrical drawing or perspective and (*b*) freehand drawing have been included and candidates have been called upon to satisfy the Board that they have attained a sufficient standard of education A candidate who passes the Preliminary Examination becomes a probationer and at the age of 19 years is entitled to take the Intermediate Examination which consists of two papers on styles and history of architecture two papers on construction theoretical and applied and one paper on historical architecture or mathematics and mechanics or design The probationer on passing is registered *Student R I B A* and at 21 years of age may take the Final Examination to qualify as *Associate R I B A* For this examination the candidate must send with his application four problems in design He must also write a thesis on architecture building science or design execute a design during the examination week and answer in writing or orally questions on various architectural subjects

The office of the Institute is 9 Conduit Street Regent Street London W 1

ROYAL LIFE-SAVING SOCIETY, THE.—(See SWIMMING BATH MOVEMENT THE)

ROYAL SOCIETY OF ARTS, THE —This Society originated in 1753 through the public spirit of William Shipley a drawing master, whose brother

was then Bishop of St Asaph He obtained the support of Lord Folkestone Lord Romney the Bishop of Worcester and others, and the Society held its first meeting in Rawthmell s Coffee-house, under the title of the ' Society for the Encouragement of the Arts Manufactures and Commerce of the Country ' After meeting at various places in Fleet Street Strand and Charing Cross the Society settled in 1774 in a building designed and erected for the purpose in John Street Adelphi London W C 2 where it is still located The Royal Academy is said to have sprung from the Society of Arts In 1847 the Society was incorporated by royal charter

Members pay an annual subscription of two guineas or a life donation of twenty guineas

The Society holds meetings every Wednesday during the session when papers are read on inventions improvements discoveries and other matters relating to arts manufactures and commerce There are also separate meetings of Indian and Colonial sections for the same purpose

Lectures are also given on technical subjects

A *Journal* is published weekly containing reports of meetings and much useful information

The Society has a library and a reading room for the use of members

A valuable educational work is carried on by the Society by means of annual examinations arranged in conjunction with the London County Council and other educational bodies and adapted to the requirements of evening classes and similar institutions The subjects include eight modern European languages and Japanese eight branches of business and commercial work English and arithmetic and are divided into three stages Elementary intermediate and advanced In London and some large provincial centres *viva voce* examinations in modern languages are held A silver medal is awarded in the advanced stage and a bronze medal in the intermediate stage to the best student in each subject and the certificates are everywhere accepted as evidences of proficiency The elementary examinations are held in March and the higher stages about Whitsuntide

ROYAL SOCIETY OF BRITISH ARTISTS, THE —This Society was founded in 1823 for the purpose of erecting an Extensive Gallery for the Annual Exhibition and Sale of Works of Living Artists of the United Kingdom in the various branches of Painting (in Oil and Water Colours) Sculpture Architecture and Engraving The promoters of the new Society considered that the Royal Academy and Royal Institution made insufficient provision for the exhibition of artistic works The Society began with twenty six members and six honorary members It was well supported by donors of whom those who gave a hundred guineas received a life admission ticket to the exhibitions for themselves and an unlimited number of friends Other classes of donors received life tickets if they gave ten guineas or more Subscribers or lenders received tickets and dividends of 5 per cent from the profits of the exhibitions Subscribers became members but for many years the total number of members underwent little change and the members were chiefly artists and exhibitors

The first exhibition of 1824 contained 754 works many of them by the members and was a great success The exhibition also produced a rapid sale of pictures In 1833 the exhibition was kept open during the winter months

Educational Work. In 1839 the Society decided to undertake the teaching of art and appointed professors who gave lectures at the close of each exhibition During the exhibition, conversaziones were held at which papers were read and discussed The Gallery was now opened in the evenings, and the Society formed a museum and a library

To spread a knowledge of art among the young, it became the practice about this time to invite schools to view the exhibition without charge Among the schools thus invited for several years in succession after 1839 were the School for the Sons of the Clergy the Blue Coat School the Royal Military School Chelsea the School of Practical Design Leicester Square, the City of London School St Ann s Brixton and the British Orphan Asylum

In 1847 the Society was incorporated under a royal charter and became the Royal Society of British Artists In the next year the teaching of art was regularly established by the opening of a school for the study of anatomy the antique drawing from life painting and sculpture The courses of lectures were attended by about a hundred students in the first year

The Pictures Exhibited during the ninety years of the Society s existence have included works by most of the great painters of the nineteenth and the first years of the twentieth centuries In the first decade appeared the " curious imaginings ' of John Martin in " The Deluge ' Belshazzar's Feast ' and The Plains of Heaven ' Later appeared George Barrett s landscapes J B Pyne s Italian scenes W Shayer s gipsy encampments and J J Wilson s pictures of rough weather on the English coasts

In the forties and fifties appeared Hering's animals and Hurlstone s figures (Hurlstone was named by Queen Victoria as the first president of the Society under the charter in 1847) Then came Cole s landscapes portraying Surrey cornfields shining rivers and leafy lanes Henry Moore s marine subjects and Edwin Ellis s seas and skies L H Wyllie and F H Potter exhibited in the seventies and James McNeill Whistler became president in 1887 At the International Exhibition at Paris in 1889 of the 100 medals awarded to British artists fifty five were obtained by members or exhibitors of the Royal Society of British Artists Exhibitions in more recent years have contained many of the paintings of Sir Frederick (afterwards Lord) Leighton who began his famous series of studies in the last years of the nineteenth century G F Watts exhibited many of his portraits and Sir Edward Burne Jones and Sir John Gilbert were frequent contributors

The Society s rooms are in Suffolk Street Pall Mall

ROYAL SOCIETY OF LONDON, THE —The Royal Society is the premier scientific institution in Great Britain It traces its origin to the gatherings about 1645 of a coterie of ' divers worthy persons," who met weekly in London to " discourse and consider of philosophical enquiries " They themselves were influenced in such association by the intellectual legacies of Francis Bacon the stimulus in regard to the promulgation of what was then termed the " new philosophy " Meetings were held at the " Bull's Head " tavern in Cheapside old Gresham College and at other centres The removal of some members of the circle to Oxford (1648–1649) led

to discussion of the new studies there resulting in the foundation of the Philosophical Society of Oxford After the Restoration with more tranquil political conditions the meetings at Gresham College—which had been dropped—were renewed the company including John Evelyn Francis Glisson Christopher Wren and John Wilkins (Warden of Wadham College, and afterwards Bishop of Chester) Soon definite organization was mooted, and a list of forty one persons likely to adhere was brought in On 5th December 1660 an obligation to consult and debate was signed The king extended his patronage and a charter of incorporation passed the Great Seal, 15th July, 1662 A grant of arms was made and His Majesty presented a handsome mace The Society made rapid strides and the publication of the *Philosophical Transactions* was begun in order to record its chief doings This issue is still maintained embodying the principal scientific advances of the Fellows and of other men of science

Obliged to leave Gresham College (1666) the Society met for seven years at Arundel House in the Strand Sir Isaac Newton became president in 1703 holding office for twenty four years a period of ever widening influence for the institution owing to the lustre of Newton s personality In 1710 the Society moved to Crane Court Fleet Street in 1780 to Somerset House and in 1857 to Burlington House Piccadilly—headquarters provided by the State

The Society s charter book in which Fellows inscribe their names deserves mention Among the first signatures are "Charles R Founder ' James Fellow' (the Duke of York afterwards James II) and "Rupert Fellow The roll is carried forward by Royal patrons and Fellows through successive years the names a witness of the march of science

Activities of the R S The Croonian and Bakerian lectures founded respectively in 1701 and 1775, are delivered annually

Two Royal gold medals are given yearly by the reigning sovereign to English Fellows their foundation being due to King George IV Other medals bestowed are the Copley (the oldest and most prized), Rumford Davy, Darwin Buchanan Sylvester and Hughes In some cases there are valuable collateral money gifts

The Society's library contains about 100 000 volumes and is particularly equipped in the world s scientific periodicals in order to meet present day requirements In early times John Evelyn was the means of procuring a choice collection of printed books and manuscripts the latter are now in the British Museum Besides the above mentioned series, the Society possesses many memoirs and records of great historic interest including a paper by Prince Rupert the original MS from which the first edition of Newton s *Principia* was printed and over 300 letters by Leeuwenhoek

Annual Parliamentary grants of £5 000 and £1 000 are received respectively for the conduct of scientific investigations and towards meeting the cost of printing scientific memoirs

The National Physical Laboratory established at Teddington also subsidized by public money, is under the central control of the Society Its steady development and corresponding influence on industrial research have been a remarkable feature of the last decade

The President R S is chairman of the Board of Visitors of Greenwich Observatory also by virtue of his office, a member of various educational institutions, and a trustee of the British Museum

Research studentships are maintained The Mackinnon is for furthering natural and physical science and investigation in pathology At present there are two each of the yearly value of £150 Two Foulerton studentships of £400 each per annum are for research in medicine

Whilst essentially a self governing private association the Royal Society fulfils a recognized advisory relation to departments of the State Many responsible public duties ensue the activities of which were extended considerably by the problems which arose during the war There can be little doubt that the science factor will not in the future recede as regards its influence on national welfare In 1915 the Society presented a memorial to the Prime Minister on the need for the development of chemical industries and suggested methods of organization The establishment of a Board of Scientific Societies for supplying a means by which the scientific opinion of the country may on matters relating to science industry and education find effective expression is a later movement as also a committee to consider the bionomics and economic importance of grain infesting insects with special reference to imported grain A new magnetic survey of the British Isles has lately been completed under the Society s auspices

Membership Since 1847 the number of Fellows to be elected each year is limited to fifteen A new statutory provision has however recently been introduced (1916) whereby the council may recommend for election a limited number of privy councillors and men distinguished in the scientific or educational service of the State or by their services to science and its applications Now and again men of eminence are elected as foreign members the total not to exceed a roll of fifty

The president holds office for five years Sir Joseph Thomson O M Nobel Laureate in Physics (1906) elected in 1915 was succeeded (1920) by Professor C S Sherrington of Oxford University Among his immediate predecessors were such worthies in science as Lord Kelvin Lord Lister and Sir Archibald Geikie T E JAMES

Reference—

Record of the Royal Society (Oxford, 1912)

ROYAL UNIVERSITY OF IRELAND.—(See IRELAND THE NATIONAL UNIVERSITY OF)

RUBELLA—(See INFECTION AND SCHOOL CHILDREN)

RUGBY FOOTBALL, THE TEACHING OF.—That Rugby football as a medium of education has great possibilities has been an acknowledged fact for many years past As a training for endurance initiative quickness of thought and unselfishness it yields to no other game Even those who insist and with some reason, that games have during the last thirty or forty years played too large a part in our public schools will admit that Rugby football has been responsible for much good and for but little of the evil that the superfluity of athleticism has occasioned It has, at least the merit of combining a maximum of exercise and interest with a minimum of time necessary for its teaching and actual play Nowadays it certainly does not deserve—if it ever did—Mr Roosevelt's reproach of being "a brutal pastime," or Mr.

Kipling's gibe at its players as "muddied oafs" In these days the danger is that the game may become too scientific too mechanical too much of a business and too little of a game For this we have to thank the Welsh club teams and International XV s of the eighties and early nineties, who went far to make the game a science and, consequently enjoyed an almost unbroken series of successes for over ten years until England Scotland and Ireland in turn adopted their system and methods

The chief problem therefore that confronts one who would teach boys to play the game is to preserve its character as a game and at the same time to create a school XV scientific enough to hold its own against its rivals or in other words, to produce a team which possesses the requisite mechanical combination without depriving its members of initiative and individuality To attain this result is obviously a much easier task when grown and experienced men are in question than when boys, yet in the making are concerned

The "Coach" The first requisite will be a 'coach' This will not mean a 'games master" —an innovation of the last twenty years which has proved to be by no means an unmixed blessing— and still less a mere 'trainer" The man who can successfully teach a school XV to play Rugby is not to be found every day It is not *essential* that he should be a first class player himself though that may make his work easier A man may be the finest of players but—as in other spheres of education—he may not be able to impart his own excellence Possibly it is more often the less brilliant performer who will succeed because he can better appreciate the difficulties of the tyro and the necessity of driving home the elements In any case he must as far as possible sink his own personality and practise the virtue of self effacement He must rigidly abstain from any interference in the "management" of the game apart from the actual play In the selection of the team, for instance he should have no voice It is no easy matter to see the wrong players selected and to keep silence but he is to be coach and not captain, and any lessening of the boy s responsibility and authority is strongly to be deprecated Nothing is more detrimental to the character-building of the boy than interference in the selection and government of those who are to act under him "ἀρχὴ ἄνδρα δείξει"

Secondly, he must avoid coaching in season and out of season To shout instructions and advice from the touch-line during a match (and above all an inter-school match) is to discourage in team and individual alike the initiative and adaptability which it should be his first aim to foster In inter-school matches such a proceeding is obviously unfair (the looker-on sees most of the game) but apart from that the coach's object is not that the team may win this or that match but may learn to play the game at its best, and that they will never do if kept in leading-strings Even in ordinary games—as opposed to matches—it is better to interfere as little as possible during the course of the game Casual advice scattered broadcast in the middle of a game is not likely to prove of much use To stop the play frequently and to preach a sermon on every text that presents itself is to ruin the game *quâ* game and to deprive it of the spirit that makes it worth playing at all A word of warning or of suggestion to the individual here and there, and a few words of counsel during an interval to the team as a whole are more likely to be effective

In the writer s opinion the proper, and almost the only time for coaching is during the practices, which should take place purely and simply for purposes of instruction These should be neither too frequent nor too long Two or three a week, and lasting from half to three-quarters of an hour, will be amply sufficient If they are too long, keenness evaporates and a 'stale' practice is worse than none at all In these practices, tactics can be explained and tested, combined movements performed, over and over again if necessary, individual faults and omissions pointed out, and improvements demonstrated by practical example The players will know that they are "out to learn," and will neither be bored nor aggrieved at having their "game' interrupted and curtailed

Points to Dwell On In training a school team, it must not be forgotten that the elementary principles of the game are continually to be impressed (*e g* the low tackle the quick horizontal, not the high-elevation, pass, handing off the inward pass when the player in possession is near the touch-line the backing-up but not over running, of the man with the ball and all the other rudiments) Some coaches are apt to assume that all these—the A B C of the game—come to boys by the light of nature but "fit, non nascitur is true of all but the few even at football

It is a mistake, too to treat a school team as if it were composed of experienced players For instance it is well even in these days to insist on such sound maxims as "no passing near your own goal line" "do not pass unless the receiver is in a more advantageous position than you are", 'before kicking, run as far as you can but be sure of your kick at the end" These rules may no doubt be broken with impunity by a club team that has experience and tradition behind it have been broken with marked success by the Harlequin teams of a few years back, but a school team seldom profits and frequently loses, by ignoring them The genius is not to be fettered by ordinary rules, but in a school team it is not likely that many will be able to claim that title

One point on which the greatest possible emphasis must be laid is the keeping of the proper positions in the field, especially by the three quarters This is perhaps the most important point, and at the same time the hardest, for the boy-player to remember His natural inclination is to rush forward and so get in front of his colleague who has the ball thus preventing any pass but a forward one—or to close in to the spot where the play is fiercest thus losing the chance of receiving a pass out and being able to profit by the open space in his front Until the necessary self-restraint and observation requisite to secure this point are attained, the coach s work is only half-done

Lastly, let the coach's aim be always to keep the game a game in spite of the mechanical character it has acquired and to make the player use his brains The perpetual talking of football "shop" is certainly not to be encouraged, but to make the members of a team work out problems of attack and defence for themselves is as beneficial for members of a fifteen as it is for members of an O T C The more headwork displayed and the more intellect employed in any game, the better—not least in Rugby football

There is, it is to be hoped, little need to suggest

the encouragement of a chivalrous spirit and the discouragement of all "sharp practice" in public school football

Diet and Training. With regard to the training of a school team, it is as well to avoid long runs The best method of keeping in condition is to take part in the short practices such as are suggested above dribbling passing and "punt about" for all the team scrimmage work, heeling screwing for the forwards short sprints if necessary Long distance runs are apt to deprive members of a fifteen of both pace and dash

As to diet, it is unnecessary at a school to make any stringent regulations The ordinary school fare —simple and regular, with little or nothing between meals the minimum of sweets and pastry certainly—should be all that is required For a growing boy both the less and the more will alike prove unhealthy

The Football Season How long the football season at schools should last is a disputed question After some experience in the various arrangements at various schools, the writer inclines to the full term up to Christmas and not more than five weeks afterwards If the game is played for a longer period than this it is apt to drag at the end and become a task rather than a game The five weeks after Christmas will give the rising players who are likely to fill vacancies in the next season s team sufficient experience and avoid the necessity of building up an entirely new combination in the following autumn Once football becomes a weari ness to the flesh or the idea begins to prevail that it is only being continued to fill up time the game will no longer be played as a game and that —it cannot be too often repeated—is to deprive it of many of the great merits that it possesses

R D B

RUGBY SCHOOL —In 1567 Lawrence Sheriffe citizen and grocer of London founded the Free School at Rugby He left to trustees houses and land at Rugby and Brownsover and the third part of a field called Conduit Close in London the last worth £8 a year in 1600 now bringing in over £5 000 The first master was appointed in 1574 but the school encountered a long series of misadventures at the hands of fraudulent trustees with resulting litigation which continued until 1667 when matters were definitely arranged by the courts In 1687 Henry Holyoake Fellow of Magdalen began a successful head mastership of forty three years and under him the school achieved more than a mere local celebrity In 1748 the school house became unfit for use and a move was made into the manor house which served until 1816 Thomas James a great schoolmaster took up the reins in 1778 his time-table was the foundation of the one now in use, the three half holidays a week 'imposition paper" and the study system are some of his wise innovations which still survive He greatly improved the tone and discipline of the school and resigned in 1794 Under his successor three years later the "Great Rebellion took place an odd kind of mutiny and secession dealt with by soldiers armed with fixed bayonets drovers with horse whips and the reading of the Riot Act ! Extensive building operations under Dr Wooll produced the School House and Old Quad in 1816 and the Chapel by 1821, and, in the meantime the School Close was formed into a magnificent playing field In 1828 the greatest of modern schoolmasters Thomas Arnold, the founder of the public-school system, began his wonderful reign of fourteen years His difficulties and successes are immortalized in *Tom Brown s Schooldays* A fine scholar an enthusiastic historian a devoted lover of literature, and an intensely religious man, he communicated his spirit to his Sixth Form and through them to the school But the innovation he devised and introduced was the principle of internal autonomy his practice was to trust his Sixth giving them many liberties and privileges but demanding in return a high measure of public service for the good of the school (See ARNOLD THOMAS) Arnold kept the numbers strictly down to 280 under Tait they were allowed to rise to nearly 500 and Tait carried Arnoldism to excess Goulburn his successor appointed in 1850 as some sort of antidote made a great impres sion by his religious teaching Temple who came next restored the Arnoldian tradition and the ugly New Buildings were erected during his rule Later heads who have governed with wisdom and distinc tion are Jex Blake Percival and H A James and the late chief Dr David now a bishop was a worthy successor of these great names

The School of To-Day The school buildings include a new chapel with a beautiful interior and interesting windows it contains monuments some of great beauty to distinguished O R s and masters and its organ is remarkably good The Temple Speech Room the Temple Reading Room and Museum and the Arnold Library are useful addi tions to the school equipment forming links with the past

The original intentions of the founder are now carried out in the Lower School of Lawrence Sheriffe a day school for the use of residents in Rugby There are a good many foundation scholar ships carrying boys from the "subordinate school' to the great school free of charge or at reduced fees The prizes and scholarships open to competition at Rugby are numerous and valuable The standard of work is very high and moderate specialization is encouraged Modern Languages History Mathe matics and Natural Science are subjects in which many open scholarships are gained annually at the universities while the reputation of the school for Classics is still of the highest

Rugby football of course flourishes as it ought to do in the school where it had its birth There are annual matches with Uppingham and Chelten ham Racquets finds many votaries and the O R Club subsidizes this expensive game Fives is played a good deal there are both Rugby and Eton courts Cricket is second only to football and Rugby has produced some notable players A form of athletics practised with peculiar assiduity is cross country running There are 13 fixed courses and 6 or 7 are run every Easter term The blue riband is the winning of the "Crick —a run of 12½ miles The O T C is an institution magni-ficently organized and conducted with extra-ordinary skill and vigour it is one of the most remarkable open air features of the school

RUMANIA, EDUCATION IN —Education in the Danubian principalities of Moldavia and Wal-lachia which united in 1859 to form the State of Rumania was carried on in early times by the parish priest or by the lector of the church the didascalus (Rum *dascal*) There was preparatory instruction in the monasteries for the clergy while the nobility (*boyars*) engaged tutors, mostly

foreigners and especially French About the beginning of the nineteenth century, a few rich landowners set up schools of a superior type on their estates

A new era began in 1834 Provision was made for secular, public and elementary schools and in the great centres for secondary schools which were also to train elementary teachers the system culminated in "complementary classes' at the colleges (St Sabbas at Bucharest and the Academy at Jassy) which later developed into the two universities (Jassy 1860 Bucharest, 1864) Schools of commerce and handicrafts and special schools were founded in the reign of Charles I (1866–1914) The old system of instruction was local and owed its origin for the most part to individual initiative—the Church or a princely founder the seminaries belonged to the bishoprics The Napoleonic University is the root idea of the present system the State being regarded as the principal founder and guardian of the schools

General Considerations Elementary instruction is gratuitous foreigners pay fees for secondary education University professors are remunerated by the State the students fees levied in the Faculty of Law simply go to pay the expenses of conducting examinations

The property of the schools is administered by a special institution depending on the Ministry of Instruction called the Educational Fund

Kindergartens, for children from 4 to 7 were introduced in 1909 they are not very numerous and have only a limited popularity

Elementary Education This is compulsory children must attend from 7—or even 6—to 11 (in the towns) and to 14 (in the country) The syllabus includes reading writing arithmetic Holy Scripture Rumanian history and the elements of geography grammar geometry natural science and citizenship The text books are passed by the Ministry of Public Instruction

One school must be provided in country districts for every group of houses able to furnish forty pupils Attendance however is irregular owing to the scattered nature of the population and the requirements of agriculture during the summer the supply of schoolmasters and schoolmistresses is attached to conditions which are rather difficult and in a good many villages there is no schoolhouse

The syllabus of the rural schools provides for five years study elementary agriculture is carried on in the school gardens and sometimes lessons in some form of handwork are added for girls weaving lessons are obligatory Workshops sometimes supported by popular banks are attached to the schools here and there The children usually form a choir and take part in the services of the church The holidays last from July to September

The number of teachers male and female is 1 403 in the towns and 6 723 in the country, the number of regular scholars is 66 491 in the towns and 394 774 in the country

Secondary Education Classes for adults have been founded in a few towns by private initiative

There are fourteen normal schools for men and four for women and practising schools are attached to them The period of study is six years the last year being devoted to the theory and practice of education Assistant teachers are necessarily untrained

The seminaries at Bucharest one of which is of private foundation and at Jassy Galatz and Râmnicu Vâlcu, correspond, up to the third class, to the normal schools

Secondary education was modelled on the French system The natural pride of the Rumanians in their Latin descent caused a very important position to be given to Latin Greek was not overlooked (it was learned in five classes out of seven) and mathematics figured at the head of the programme The late Sp Haret Minister of Public Instruction, to whom the establishment of rural education on its present basis is due introduced the principle of specialization beginning with the fifth class in the Upper School and since 1909 there has been a system of higher instruction in science corresponding to the *Realschulen* of Germany a modern side and a classical side Two general examinations terminate the work of the fourth and eighth classes

There are now twenty *lycées* and twenty two *gymnases* in the chief towns There are eleven similar schools for girls

The masters are university men they are required, rather as a matter of form to have taken courses in the theory and practice of education their selection is made by supplementary examinations imposed on licentiates and doctors bearing not only upon their aptitude as teachers but also (which may seem superfluous) upon the extent of their acquirements which have already been certified by their degrees Their names are then placed on a list, which remains unchanged for a great many years Among other disadvantages the system opens the door to political intrigue and favouritism

Higher Education The University of Bucharest contains five faculties—arts science law medicine and theology there is no faculty of theology in the University of Jassy The course of study lasts four years (counting the preparatory year) for arts, science and law and six or eight for medicine Examinations take place at the end of each year The printed work which used to be presented for the degree of licentiate has now been abolished it was equivalent to the thesis of the German doctorate Examinations for the doctorate accompanied by a thesis have been introduced in its place but candidates are rare the degree of Doctor generally comes from abroad The faculty of law, which also introduced the doctorate has been obliged to abandon it

The laboratories of the two universities are among the best in Europe some of them have become independent self governing scientific institutions (*e g* the Institute of Bacteriology at Bucharest under Professor Babesh and Professor J Cantacuzène) The school of veterinary surgery (five years course) does not rank as a faculty

The equipment of the faculty of arts is inadequate and the attendance poor

What is wanting in the universities is adaptation to the needs of the country An agricultural country possesses no chair of agriculture nor in spite of the great importance of Rumanian petrol is there a chair which might be devoted to its study (Perhaps an Institute of Petrol independent of State control would be even preferable) The faculties of arts have no professors for the languages, literatures and history of the neighbouring peoples, the Slavs and Magyars though an "Institute for the Study of South Eastern Europe" has been at work on a private foundation since 1914 To remedy the defects of general education which are still very conspicuous, evening classes must be organized, besides a complete system of university

extension The popular University of Bucharest is nothing but a collection of lectures, sometimes of not very high quality Attendance is variable There is especially a very large number of students of law—nearly 2,000, medicine comes next with 1 500 The students in arts and science are chiefly intended for the teaching profession Girls are admitted to the university on the same conditions as their brothers there are two women on the teaching staff at Jassy

Professors and lecturers in the University of Bucharest number Theology 9 law, 30 arts 25 science, 30 medicine, 36 At Jassy the figures were Law, 26, arts 16 science 29 medicine 27

Special Education. The teaching of agriculture has been neglected Twelve elementary schools (two years' course) and six lower schools (three years) are at work in different parts of the country with farms attached to them A single higher school exists at Herăstrău near Bucharest

Schools of housekeeping are to be established in the large villages There is one school of forestry for the whole country In addition there are three schools of viticulture

Schools of handicrafts date only from the reign of Charles I, there are thirty nine elementary schools (at least two years' study) and seventeen lower schools (seven years) of this kind a higher school of arts and crafts (six years course) flourishes at Bucharest, and another at Jassy Attention has lately been given to the activities of former pupils a system of industrial banks furnishing advances for new undertakings has been suggested The professional education of girls is given in schools of two classes providing in all seven years study up to the present there are thirty two of the elementary class with two workshops but only one of a higher type There are also three schools of housekeeping in the towns and seven schools of domestic economy

The Polytechnic School at Paris served as model for the School of Bridges and Highways the junior classes train State officials charged with the maintenance of the roads the higher classes turn out civil engineers But applied electricity and the treatment of petrol have still to be studied in Germany Italy or France The erection of a complete Polytechnicum belongs to the last provided improvements

The School of Architecture though a young institution has already rendered service to the country by studying the ancient national style and endeavouring to adapt it to the needs of the present day

Eleven commercial schools offer a three years course and four other schools offer further instruction Up to now they have missed their mark for commerce is in the hands either of foreigners or of Rumanians who despise these special schools The Academy of Commerce founded quite recently at Bucharest is still in an experimental stage

The Schools of Fine Arts and the Conservatoires of Music and the Drama at Bucharest and Jassy perform a useful work As most Rumanian artists get their training abroad these schools provide music and art teachers for the secondary schools The proposal to found a Rumanian School at Rome supported by the Italian Government unfortunately fell through High schools for scholarship art and historical philological researches, with a course of two years for licentiates of doctors have been recently founded in Paris and Rome

The military schools at Jassy Craiova, and Bucharest are distinguished for their efficiency

Private Education. Private schools in which the teaching of Rumanian national history, hygiene, and morality is under State control belong to the different foreign communities The Germans have at Bucharest a complete system of education, and many Rumanian children attend their schools, the Hungarians too spend a great deal on their institutions Others belong to religious societies the Order of Our Lady of Zion has set up huge establishments for girls at Bucharest Jassy, and Galatz Others again are private adventure schools Endowed schools are few The German schools give certificates which are recognized officially

Conclusion A systematic general educational reform on national and practical lines is imperative and it must be so organized that, even if smoothness of running be impaired, the teacher may be given back some degree of freedom and initiative and be enabled to cultivate a higher sense of responsibility N I

RUMANIAN, THE TEACHING OF —Rumanian belongs to the group known as the Romance languages which are all derived from the Vulgar Latin and represent various degrees and phases of evolution Rumanian has preserved a more primitive form of inflexion and the changes are less thoroughgoing than in any of the other known Romance languages In the first place the grammar in its most important elements has a thorough Romance complexion and the dictionary has also retained a considerable archaic Latin element Of all the Romance languages Italian stands nearest to Rumanian and anyone familiar with the former will find it comparatively easy to acquire Rumanian Written for many centuries in the old Slavonic alphabet it has taken close upon one hundred years to change it into the modern Latin alphabet The final form which this orthographic change has assumed is to approximate to Italian

Pronunciation and Grammar The vowels are all read full and clear as in Italian and the consonants have the same values with the addition of *j* like the French *j* in *juge* and *z* like the French *z* in *zone* *C* and *g* are pronounced as in Italian hard before the vowels *a o u k* (*g* as in *got*) and soft before *e* and *i* (*ch* as in *chin* *g* as in *gem*) and *ch* and *gh* have the same hard pronunciation in both languages For the English sounds *sh* and *ts* (Italian *sci* and *z*) the Rumanians have adopted *S* and *T* The one characteristic vowel in Rumanian which it has in common with the other nations of the Balkans viz *ă* and *â* is a guttural sound very much like *i* in *bird* or *o* in *work* There are practically only *two* declensions governed principally by the final letter vowel or consonant The declension is made by adding the definite article at the *end* of the word, the article does *not* stand before the noun as in other Romance or Teutonic languages There are practically only *two* cases one for the nominative and accusative and the other for the genitive and dative There are three conjugations according as the shortened infinitive ends in *a e* or *i* *e g* *acănta* (cantare) *aface* (facere) *numi* (nominare) The verb is conjugated with the help of the auxiliary verbs *am* (habeo) *voiu* (volo) and *fui* (fui) The present and perfect indicative are simple forms but all the other past and future tenses are complex The Rumanian language possesses a large

number of undeclined particles (adverbs, prepositions conjunctions) There are a very large number of words of Slavonic origin There are also Hungarian and Turkish, as well as Greek and Albanian, words in the language

Dialects and Standard Rumanian. There are three dialects one spoken by the whole of the Rumanians north of the Danube (*i e* in the kingdom of Rumania and in Transylvania Bukovina and Bessarabia) the second dialect is spoken by the Rumanians in Macedonia who are comparatively few and the third by a dwindling number of Rumanians in Dalmatia and Istria The last two have no written records, and are only spoken dialects

For some fifty years a process of elimination, substitution and introduction of neologisms has been going on by which an urban literary language of modern Rumania has been created It differs however from the rural only in its vocabulary the grammar being the same Most of the new words which have become assimilated are borrowed from the French A knowledge of Italian and French would thus prove most helpful to the student of Rumanian The grammatical constructions are very simple and the whole morphology of the language is almost as simple as the English

A Course of Reading. Among the best means of acquiring a thorough knowledge of the real language is to read the popular literature notably the *Fairy Tales* which are written in a simple crisp popular style especially those contained in the collections of Ispirescu Fundescu Stancescu and Creanga—the last presenting some dialectal forms and words of Moldavian origin which are slightly different from the Wallachian Next in importance are the newspapers the literary language being in a fluid state the papers help to mould its shape The writings of Alexandri Eminescu and Caragiale give the best form of modern Rumanian and finally the writings of the historians of the eighteenth century such as Neculcea and N Costin would complete a thorough mastery of the language The student must follow the order of the writings as indicated above No good modern translation of the Bible exists which otherwise would prove helpful

Text-books, etc There is no Rumanian English dictionary in existence but there are some good Rumanian French dictionaries notably that of F Dame (Bucharest 1895) and a smaller one by M Saineanu (Craiova 1897) Of grammars there is in English one by R Torceanu now out of print and one by M Beza and in French the elaborate historical grammar of O Densusiano In German there are Weigand s and Tiktin's There are of course Rumanian school grammars such as Nadejde Manliu etc but they are practically inaccessible outside Rumania They are useful for the tables of declensions and conjugations The great work of Diez will always remain the standard book M GASTER

RURAL POPULATION, EDUCATION AND THE —The end and aim of sound education is to turn out men and women who can think for themselves and think correctly who can use their hands intelligently, and at the same time have a real love of literature who understand the whole duty and responsibility of the citizen and who will follow after righteousness Is our national system achieving these objects ? The answer can hardly be in the affirmative To achieve these objects, a full and generous education must be given, and no system of education can be full and generous which neglects the development of the manual side In every school in which manual instruction is not properly given, only half the child is reached, indeed, in some schools the old system of text book work can hardly be said to reach the child at all This type of instruction is sometimes termed literary, and yet it seldom creates any real love of books

Development of manual instruction does not mean the mere adding of certain handicraft subjects to a perhaps already overcrowded curriculum, it means much more—it means the introduction of a new method (See *Handwork as an Educational Subject* which can be obtained from the National Association of Manual Training Teachers, 17 Harold Road Leytonstone London, E11)

It will be admitted that every nation needs a large proportion of intelligent workers The higher the standard of the workers the greater the results achieved by the leaders of industry, and the greater the production of wealth for the nation

Can it be shown that England and the Empire stand specifically in need of a great increase in any one type of citizen ? The British Empire comprises one quarter of the land surface of the globe, and yet the present *white* agricultural population (*i e* all men women, and children living on and by the land) amounts to only 13 400 000

Again the agricultural population of the United Kingdom has seriously decreased during the past fifty years as is shown by the following table—

Census Year	Number of Persons male and female engaged in Agriculture in the United Kingdom	Percentage of the Total Population
1851	3 465 000	12 6
1861	2 997 000	10 4
1871	2 713 000	8 62
1881	2 620 000	7 51
1891	2 458 000	6 51
1901	2 305 000	5 56
1911	2 273 000	5 04

Further the total production of the soil of the United Kingdom tends to decrease, while in most European countries the increase during the past thirty years has been remarkable The land of the United Kingdom is capable of a vastly greater production To this fact all recent Government committees experts and practical cultivators who have studied the question bear witness But, if the land is to yield more there must be more cultivators A larger proportion of the rising generation must be induced to go in for a career on the land One reason why the agricultural population has been diminishing is that conditions of work and opportunities for betterment have not been what they should Better conditions must be created as they have been created in other countries

The Working of the Manual Method. Another reason undoubtedly is that, in the past, the education in rural elementary schools has been too urban in character *Country schools have been little town schools and have failed to draw inspiration from surrounding country life*

What changes then are needed to bring our system of education into line with the needs of the time ? First of all, instruction in the elementary school must be of the right type, before beginning

to deal with subsequent phases of education Taking the country school as soon as it is possible to provide a school with a teacher capable of working it, the manual method should be adopted

In some quarters there is a tendency to await the provision of a specially equipped manual room before embarking on this instruction But this is a great mistake If the instruction is beneficial to the children then the largest possible number of the present generation should receive it Experience proves that it is perfectly practicable to develop manual work in even the smallest rural school and that provided one member of the staff is fairly well qualified there is no reason for delay Teachers can qualify to give manual instruction by attending Saturday and vacation courses

There is every indication that manual instruction will occupy a more and more prominent position in the training college curriculum so that the number of properly qualified teachers will steadily increase Handicraft subjects are many and varied—clay and Plasticine modelling brushwork and drawing cardboard work paper cutting light woodwork heavy woodwork cooking sewing laundrywork housework, and Nature study (this can be taken in conjunction with the first five items) are subjects which can be taught in town and country school alike

Boys and Girls The great thing is to differentiate as little as possible between boy and girl It is useful for boys to have some idea of cooking and to be able to use a needle just as it is to the good for a girl to have some knowledge of woodwork so that she can put up a shelf or mend a chair leg when she has a home of her own The great object is to make the working classes more handy than they are now

The School Garden The garden should play an important part in the country school Its function is not to turn out gardeners but rather to provide a basis for much of the manual work arithmetic and Nature study It would be a good thing if urban schools also could have gardens but this is generally impossible

Another distinctive subject for girls might well be butter making This is a first class handwork subject yet it is taught in very few schools it could be taught where a member of the staff was a farmer s daughter or where a neighbouring farmer s daughter could come in and give the instruction which is successfully done in a few schools In connection with it ideas of cleanliness hygiene and the proper handling of milk could be inculcated This is most important as much infant mortality can be traced to the improper handling of milk

The School Co-operative Society Boys could be taught sack mending and the woodwork construction of garden and farm accessories Boys and girls should be taught bee keeping and rabbit keeping The country school might even keep its pig The most effective and distinguishing feature should be the school co operative society dealing in bees pigs, and poultry, as well as handling the garden produce

Such a society should be run on a commercial basis so as to instil business habits and a knowledge of book keeping In practice it is found that nearly all the needed school arithmetic can centre round the garden and co-operative society Such school co-operative societies have been in existence for several years with most satisfactory results

A school in which all this range of instruction is fully developed achieves four great results—

1 It adds greatly to the children s interest in school life

2 It adds to the schoolmaster's interest no master, when once he has taken up these new methods wishes to go back to the old text book methods

3 The children leave school better able to use their hands intelligently and with a greater grasp of the circumstances of life

4 The parents become really interested in the school life of their children, an interest sadly lacking heretofore in England in comparison with Scotland and other countries so that the parents are willing to leave their children longer at school than they otherwise would

The Leaving Age and Continuation Education This last point naturally leads up to a consideration of the right leaving age and while there is every justification for raising the leaving age in the towns to 16 this would not be desirable for country districts where the boys certainly ought to leave at 14 or even at 13 if they are going to follow a career on the land as otherwise they cannot learn farm processes properly But this does not mean that their education should stop at the age of 14 There is nothing more unsatisfactory than our present system of spending millions on elementary education and then turning the children out at 14 to forget to a very large extent the instruction which has been so costly In country districts if children leave school at the age of 14 adequate continuation instruction should be provided for them up to at least the age of 16 or better still until 18 as in Denmark not only instruction of a manual character but of a literary character as well for their love of reading must be developed if we wish to raise the whole standard of our population

Farmers must not say that it is impossible to arrange for day continuation instruction being given to lads working on farms for it is the only form continuation instruction can take The evening school does not answer well in the country After a day spent in physical work the children are much too tired Centralized continuation day schools such as exist in Canada and other countries have proved to be a practicable way of giving continuation instruction and farmers have found that they can arrange for it Apart from these a great deal more should be done by the local education authorities in the way of providing manual classes definitely agricultural in character—hedging ditching thatching etc —for labourers sons who have left the elementary school

Mr Fisher s progressive and comprehensive Education Act will make it possible to give effect to the suggestions made in this article but only if the Act is interpreted in a liberal spirit and the necessary money is forthcoming It will fail unless there is a strong public opinion in favour of a higher standard of education and in favour of making sacrifices to secure it C T

RURAL SCHOOL, TEACHER IN A —A rural school presents two groups of problems One group arises from the fact that the school is situated away from towns the other from the fact that the region served by the school being sparsely populated the number of pupils is small

The rural teacher is therefore faced by the

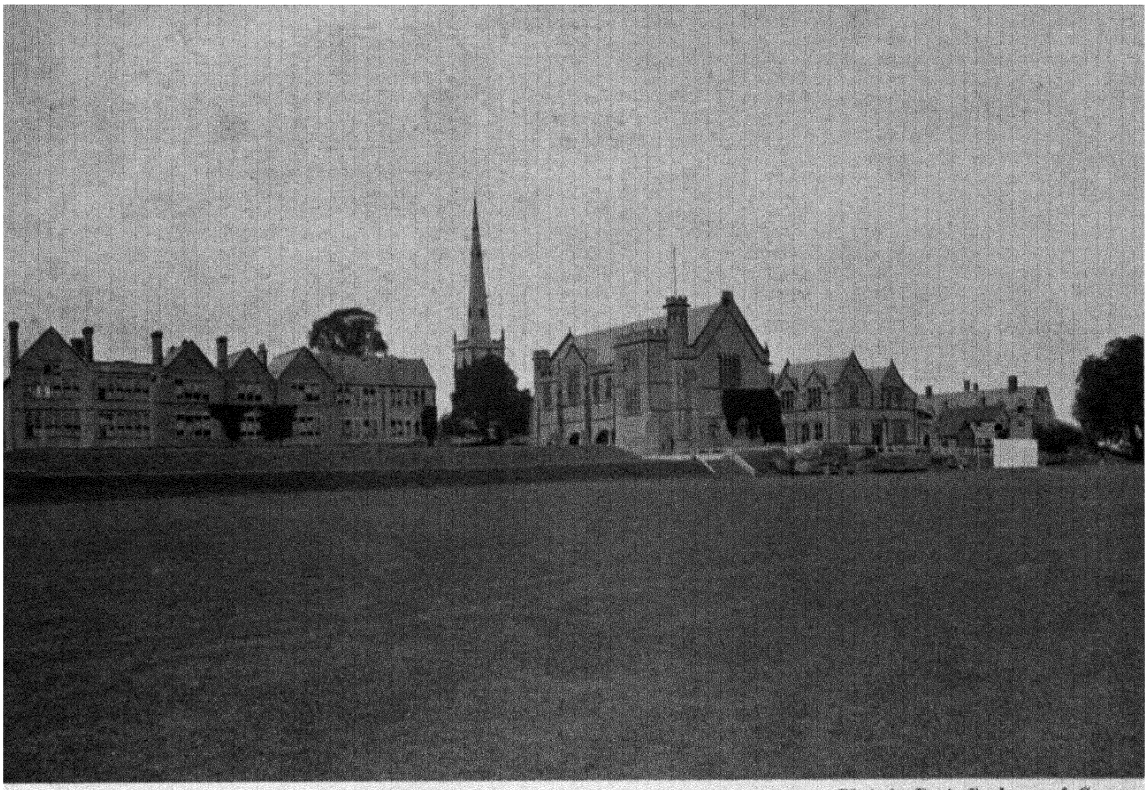
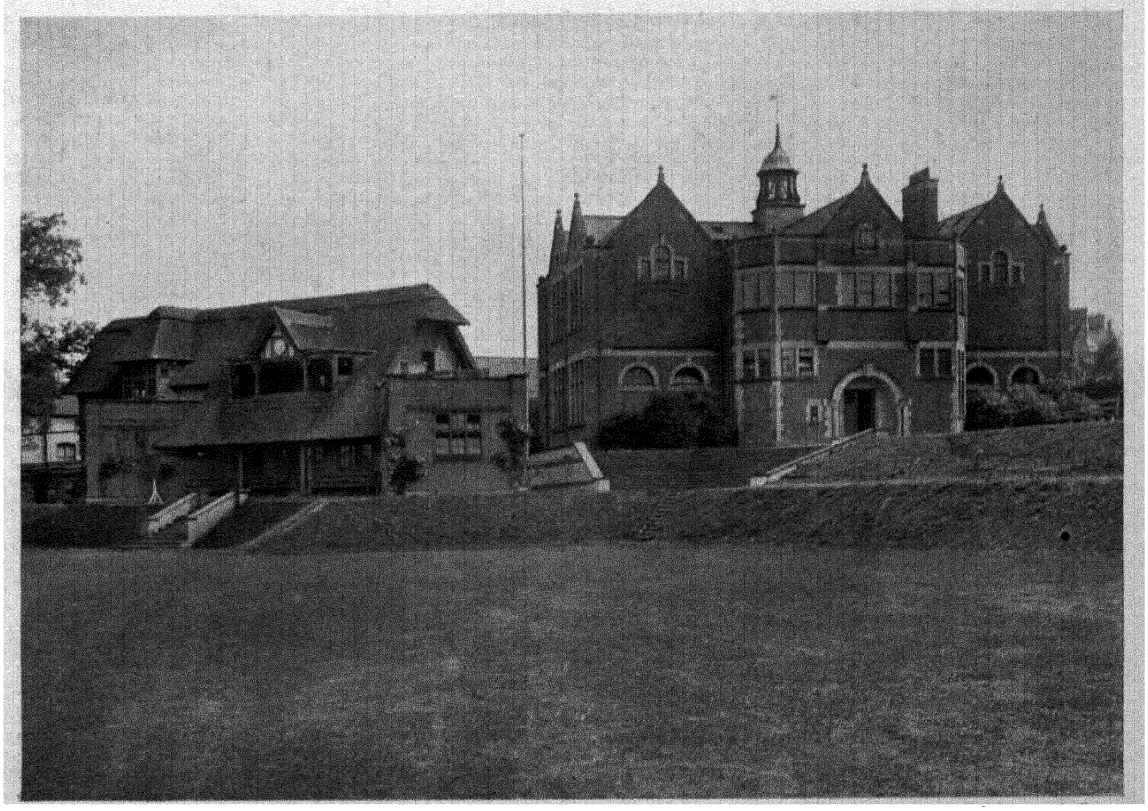


Photo by P. A. Buchanan & Co.

Repton School



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Repton School Science Schools and Cricket Pavilion

special problems of the small school which have been discussed briefly in the article on the Head Teacher (*q v*) The acutest form of them all faces the head mistress of a school so small that the local education authority cannot afford a man s salary for the head teacher The problems of the small school have not yet been generally solved which means of course, that the rural school teacher has had no special training in the organization of a small school, nor in the special teaching methods advisable

It is no easy matter for the rural school teacher to attend conferences, or to visit other schools for the purpose of supplementing his own experience as distances are great and travelling facilities poor What however he lacks in opportunities of pro fessional intercourse he makes up by the intimacy of his acquaintance with his pupils If he is fortunate in his district he will find some congenial spirits among the adults of the neighbourhood and he will obtain such a knowledge of life and will have such occasions for reflection as fall to few of his urban colleagues

But if the rural teacher has longings for the town regards his post as a stepping stone fails to appre ciate the beauties of rural life and feels the want of that society and those opportunities for the education of his children which can only be obtained in a town he is likely to be very unhappy All this tends to support the theory that rural teachers should be men and women who love rural life and that they should be specially trained for their work in rural schools

Gardening and Dairy Work Just as in town schools the work is being brought constantly into closer touch with the present and probable future life of the pupils so in rural schools there is a strong tendency towards study and work of a practical nature Nature study is an important element of the curriculum and usually has gardening as its practical correlative Occasionally dairy work may be undertaken by girls In both cases there must be one teacher for every fourteen scholars

There is a special feature about rural school gardens which is worthy of mention viz that the vegetable growing is done by the boys and the flower growing by the girls The reason for this division of labour is that in some districts if the girls were allowed to raise vegetables in the school garden they would be compelled to do the heavy digging in their home garden

In connection with the school work the rural teacher therefore has to take account of local social conditions He is indeed made to feel more directly than a town teacher his responsibility for local conditions In estimating the value of a post as head teacher of a rural school a man must not lose sight of the fact that in many localities the schoolmaster holds many of the local offices he may for example be assistant overseer secretary of the village societies or choirmaster in the village church His acceptance of any or all of these posts is usually and should always be optional but his refusal of all of them would certainly be a mistake not only from the financial point of view but from the point of view of his intercourse with the adults of the district A C C

RURAL SCHOOLS.—The Ministry of Education has laid down no line of demarcation between the purpose of the town elementary school and of the village elementary school and in view of the inevitable migration of large numbers of population from country to town and *vice versa*, the common purpose must be kept in view The problem of rural education is to utilize the limited resources of the village school, so as to secure to the country child as good a training as is possible to his town cousin From 1870 to 1902, most rural schools were maintained by voluntary effort, in some villages a rate aided school existed, but the managers or 'school board' were not always progressive and during this period real progressive education occurred mainly in towns which possessed an enlightened and far-seeing "school board' In 1902 all elementary schools, town and rural alike were placed under the borough or county councils and certainly a large number of rural schools received an impetus to the good But it is none the less true that in agricultural counties there was not much enthusiasm in the direction of improving the education of the rural child The impression largely prevailed that the rural child would on leaving school go 'on the land and therefore would need little learning other than to read and write and do a little reckoning By-laws existed by means of which the brightest children could by passing an examination in the 'three R s go to work on the land at 11 years of age In many cases these were just the children who would have proved valuable assets to the community by receiving an extended education Even in 1920 a child in most rural schools can leave for work at 13 years while most town authorities have by laws fixing the leaving age at 14

All teachers agree that at the ages of 12, 13, 14 a child develops very rapidly in an educational aspect

It is evident to any one that education is most progressive when each class consists of children of approximately the same age and attainments and when such class has a teacher to itself Except in small rural schools this ideal can be maintained respecting children in the lower standards, but invariably the scholars of about the ages of 10 and 11 up to 14 have to be taught in a group in most of the subjects In the very small village schools even the younger scholars have to be grouped, that is two or three classes under the same teacher at the same time These conditions are consequent on the small numbers of children, which preclude the financial possibility of employing sufficient teachers

Central Schools It happens, therefore, that there are in most village schools children in the grouped upper standards who would utilize the remaining years of their school life far more profitably if placed in a class of similar age and acquirements with a teacher specially for that class

This the Education Act of 1918 (*q v*) has made possible, for it enables education authorities to provide central schools in which the older scholars from neighbouring rural schools may receive, under specially qualified teachers, a sane, well balanced educational equipment which will not only fit them better than the old village school for life's work, but also assist the proper using of life s leisure Where the total number of such pupils does not justify the expense of setting up a central school, a "higher top" may be grafted on to some existing rural school which is reasonably accessible to schools in adjoining parishes

For the rural child school work falls into four stages the preliminary or infant school stage the junior, which is roughly standards I and II the middle stage which ends about the age of 11 and the senior It is in this senior stage that improvement is most needed and here the new arrangements will work well The teaching of handicraft *e g* woodwork and gardening for boys and domestic subjects for girls, can be carried out very efficiently at the central schools or higher tops for in those centres will be the necessary space apparatus and skilled instructors In such schools there will be improved facilities for physical exercises and organized games the scholars enjoying and profiting by these to a greater extent because of the large numbers

Difficulties of Existing Rural Schools These can be classed under buildings and staffing In all but a few villages in each county the rural schoolroom was built with a dual object to house the scholars and to provide a hall or meeting place for village entertainments and the like Long desks which are convertible into tables for teas etc or into backed seats for audiences are the rule rather than the exception Often there is no gradu ation of height of desks to age of scholars It is a great strain on both children and teachers when several classes are being taught in one large room Lighting has been considerably improved of late years but artificial lighting for dark winter afternoons is not as a rule adequate

The heating of rural schools is very imperfect Open fires or slow combustion stoves are the rule and the scholars in the back rows of a class are cold while some near the stove are overheated Hot water systems which heat all the rooms equally are really required Another drawback is the lack of provision for drying clothes and boots Many country children go long distances to school and in inclement weather arrive wet Cloak rooms where clothes can be dried and shoes changed are really necessary Large numbers of village children live so far from school that it is necessary for them to take their dinners to school In numerous cases the school staff unofficially undertake some provision of hot drinks during the winter months

The Teaching Staff The Ministry of Education regulations indicate that a school will not be considered suitably staffed unless it includes at least one certificated teacher (inclusive of the head teacher) for each complete group of seventy scholars in average attendance As there are in villages between 6 000 and 7 000 schools which have less than 100 children it follows that such schools will only possess one fully qualified teacher the rest of the staff will be either uncertificated assistants or supplementary teachers These latter are young women over the age of 18 who are not required to pass any examination as a test of training or knowledge of teaching other than approval by one of H M Inspectors of Education In many instances the fully occupied head teacher has not only to supervise the supplementary s teaching but also to instruct her in teaching The latest education code of regulations restricts new supplementary teachers to teaching (1) an infant s class in a rural school or department (2) the lowest class of older scholars in a rural school or department where the average attendance does not exceed 100 There are large numbers of small schools where one teacher takes the infants and a head teacher instructs the whole of the older scholars Needless to say rural schools require exceptionally skilled and patient persevering teachers especially bearing in mind the greater difficulty involved in the education single handed of thirty or forty children of varying ages and attainments than of a class of forty or fifty of uniform mental capacity

Hitherto the difficulty of the work and the very low emoluments have tended to deter the best teachers from rural work and the same causes have operated against new entrants to the teaching profession but the increased superannuation and the improved pay now resulting from the findings of the Burnham Royal Commission on teachers salaries is creating a small additional influx

In spite of drawbacks of imperfect buildings and small staff numbers of rural schools manage to introduce handwork woodwork gardening and domestic training into the curriculum with good results Regular medical inspection with special cases followed up by visits of a qualified nurse more intelligent physical drill and games have considerably improved the physique and consequently the receptivity of the rural child

Rural Pupil Teachers For many years prior to the Great War there had been a yearly decrease in the number of entrants to the teaching profession from the village areas Many county authorities have now selected certain rural schools where facilities exist for the purpose of rural pupil teacher centres The usual school staff is strengthened and a small number of intending teachers of the ages 14 to 17 are taught at such centres instead of being sent to a town secondary school where environment has tended to induce the young teacher to prefer the work of a town teacher P H A

RURAL SECONDARY EDUCATION — The desirability of providing in rural districts a scheme of study differing from the traditional grammar school course by being brought into closer relation to the environment and future vocation of the pupils has long been recognized by educationists both in this country and abroad The farm schools of the Continent the agricultural high schools of Australia the ruralized curricula of certain secondary schools in the United States and elsewhere and the agricultural sides attached to several English grammar schools afford evidence of widespread recognition of the necessity for making special educational provision for boys and girls who look forward to the pursuit of rural industries

Notwithstanding the educational efforts represented by the above named and other institutions of varying type but similar aim rural secondary education cannot be said to have emerged from the experimental stage for several important and somewhat difficult problems connected therewith still remain unsolved To facilitate their solution the Board of Education have during recent years made grants to a few secondary schools in rural districts to enable them to conduct experiments with a view to evolving a course of study which while retaining the elements of a sound general education shall devote special attention to the subjects bearing upon the science and practice of agriculture and horticulture

The Agricultural "Side" Although the agricultural "side" has in the hands of competent

and enthusiastic teachers working under a sympathetic head master, yielded excellent results, it must be admitted that it has sometimes been a signal failure It has occasionally been regarded merely as a convenient dumping-ground for boys of inferior mental calibre while it has found favour with indolent pupils as offering a "soft option" in comparison with the more rigorous discipline of the classical mathematical or modern side An obvious objection to the 'side system is that only fairly large schools can be conveniently split up into departments and day schools in sparsely populated rural areas must necessarily be small

For various reasons connected partly with organization partly with the actual teaching the trend of expert opinion is now distinctly in favour of the school whose whole curriculum is so modified as to give the desired rural bias

The Specialized Curriculum It may be helpful to outline briefly some of the main features of a course suitable for boys and girls aged from 11 or 12 to 15 or 16 the majority of whom are destined for life in the country For the first two years the work differs little from that of an ordinary secondary school except that in place of foreign languages a fuller course of science is given all pupils taking Nature study as well as physics and chemistry The boys also do woodwork and gardening and the girls balance this with needlework cookery and other branches of housecraft In the third and fourth years the rural bias becomes more pronounced The elements of land surveying give the boys an opportunity of applying their mathematical knowledge and the principles of book-keeping (with special reference to farm accounts) and commercial practice should help to remedy a serious and common defect in the equipment of the British farmer In the gardening course all the common vegetables are grown and numerous experiments are conducted illustrating the principles taught in the biological laboratory The natural history is closely correlated with agricultural and horticultural practice and special attention is paid to plant physiology Plants of economic importance and weed plants are studied in some detail and hybridization for the production of improved varieties is touched upon Diseases of plants due to parasitic fungi and insect pests are dealt with somewhat fully in the final year The rudiments of bacteriology as applied to such matters as the souring of milk formation of vinegar nitrification and nitrogen fixation in the soil are valuable for boys and girls alike The chemistry syllabus for the senior boys includes the following the constituents of soils and artificial fertilizers the identification of the elements occurring in plants and animals exercises in quantitative agricultural chemistry It is not necessary or even desirable that a boy should make complete quantitative analyses of soils for a farmer has not the necessary equipment to do this and if he had it would be a waste of time He should rather appreciate the value and know the meaning of an analysis made for him by a professional analyst The rudiments of experimental mechanics heat and electricity, besides touching everyday life at many points have too high an educational value to be omitted and although commonly regarded as essentially boys' subjects they are almost equally valuable for the modern girl The girls' chemistry course includes the study of such things as starch sugar alcohol vinegar, baking-powder, soaps and other cleansing materials, common disinfectants, and the action of various common chemicals upon metals used for domestic utensils Woodwork readily admits of a rural bias the models made being mostly articles of practical utility in farm or garden The boys are taught to estimate the cost of materials and labour Bee keeping and poultry-keeping correlate well with and give point to, the natural history of animals

General Considerations It is generally agreed that no attempt should be made in the secondary school to give definite technical instruction in agriculture this can only be done satisfactorily on a farm

Experience has shown that rural pupils respond to an education of the type indicated above Not only do they become much more efficient workers on the land or in the home but they also find that an understanding of the principles which underlie practice renders interesting what would otherwise be irksome

Of course it by no means follows that all the boys who enter a rural secondary school will ultimately take up farming or other work related thereto, and care must be taken that the instruction shall not be unsuitable for those who choose other careers A pupil who after being some time in school shows a strong bent towards one of the "learned" professions may be transferred to a school of ordinary type C W H G

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RUSKIN, JOHN —He was an unusually voluminous writer None of his works is devoted exclusively to the subject of education but scarcely one of his innumerable books pamphlets, and more important letters does not contain some reference to it The student therefore who desires exact knowledge must be prepared to study practically the whole of his writings He must also be prepared for apparent contradictions and inconsistencies remembering that Ruskin used paradox exaggeration and satire as his chosen weapons Ruskin's writings cover a period of nearly seventy years and throughout his long life he preserved his intellectual freedom

In broad outline the main tendencies of Ruskin's teaching on education are as follows—

1 He was a destructive critic of most of the methods of education common in England His chief criticisms were that they were based upon the principle of competition regarding education as a means of getting on in the world and that they ignored the real things upon which all education should be based Modern education was irreligious and superficial and gave a wrong outlook upon life

2 He was not merely a destructive critic, he is perhaps more constructive on this subject than on any other and deals with its reform in minute detail

3 He placed before all other things physical health and moral character He regarded education as an end in itself so that men and women should be happy in the virtues cultivated and the gifts developed in them as children He would teach in

every school the laws of health doing everything to make the body beautiful and perfect in youth He would teach reverence and compassion, not didactically, but by the whole atmosphere surrounding youth—the nobility of their masters the right study of history the cultivation of honour and courage and the teaching of truth

4 He made innumerable proposals relating to the various subjects which should be included in a curriculum, the basis on which all his suggestions were made being the need for selecting such subjects as should develop all noble virtues Thus he would have all children brought under the influence of great poetry music the wonders of science (the teaching of which he would revolutionize) and natural history

5 Ruskin did not confine himself to vague generalizations about beauty of character and his proposals are directly concerned with the organization of industry and with the problems of everyday life He wished to see every boy taught a calling by which he could live, and he advocated manual training and taught the dignity and nobility of hand labour He desired to see craftsmanship revived in all its branches

6 He was an advocate of a limited form of State control He desired to see State training schools established everywhere and within certain limits desired education to be compulsory universal and free

7 Ruskin pleaded for all schools to have a noble setting They should be if possible in the country with ample grounds School buildings should be architecturally beautiful well planned and healthy and the walls of the classrooms covered with great pictures

8 He did not preach a uniform system to be applied to all individuals alike He would indeed have an educational system as elastic as human nature as many sided as its needs but it must always be based upon the need for first producing physical and moral health

9 All Ruskin s works bear upon the subject but some should be specially noted (*e g Unto this Last*, which states in outline his proposals for State schools *Time and Tide* which contains some letters on the general subject of education *Sesame and Lilies* which finely illustrates his conception of the place of literature in education)

10 It is easy to forget that Ruskin was a pioneer in educational reform Many ideas of which he was the solitary exponent half a century ago have been realized (*e g* art in schools the wide organization of Nature study the modern playground movement, the revival of educational pageantry the advance in the teaching of history and literature the synthetic method of teaching the revival of handicraft and the medical and physical care of school children)

J H W

RUSKIN COLLEGE (OXFORD) —Was founded in 1899 The purpose of the foundation was to provide a centre in Oxford for the education of working men and women on broad lines The College forms no part of the University though the students have the opportunity of attending University lectures which bear on their studies at the College, and of taking the examination for the University Diploma in Economics and Political Science Its courses are designed to fit its students to take a responsible part in the work of the Labour movement and many of them, on leaving the College, take up active Trade Union and Labour work The tuition is of the special type required by the students for whom the College caters and it is natural to find that the subjects chiefly studied are Economics, Industrial History, Sociology, History, and Political Science Most of the students hold scholarships from Trade Unions and other Labour bodies The College was originally controlled by a Council consisting of the representatives of certain Trade Unions and other Labour bodies with two or three Oxford tutors who sympathized with its aims but since 1910 it has been entirely controlled by representatives of Labour In the previous year a dispute had arisen as to the objects of the College and the nature of the curriculum which led to the establishment of the Central Labour College, now the Labour College (*q v*) for propagandist education on Labour lines Ruskin College adhering to its old policy of impartial education In 1914 owing to the war its residential work had to be suspended though its large and growing Correspondence Department was maintained, and Summer schools were held In 1919 full work was resumed and in addition in October of that year a Hostel for women was opened as part of the College where women students live while taking at the College the same courses of study as the men Ruskin College has encountered many difficulties both from lack of adequate financial support and from the opposition—on the one hand of those who object to Labour Colleges in general and on the other hand of the extremists who think its methods not sufficiently advanced It is however now firmly established and in January 1921 the number of students in residence was much larger than in any previous year It is possible that in course of time the College may be taken over by the Labour movement and conducted in conjunction with other educational institutions as part of a unified working-class educational movement

RUSSELL, WILLIAM (1746 1793) —A printer who was keenly interested in history He became an historical writer and is now known chiefly by his *History of Modern Europe* At his death he left unfinished a manuscript of *A History of Ancient Europe*

RUSSELL, JOHN, EARL (1792 1878) —This famous Liberal statesman (who was born on 18th August 1792 and died at Richmond on 28th May 1878) was the third son of the sixth Duke of Bedford His Parliamentary career lasted from 1813 when he became member for Tavistock until 1866 when he retired from active political life Throughout his active life he was a keen reformer and not least in the field of education From 1819 he urged Parliamentary reform and as a member of Lord Grey s Government in 1831 he introduced the great Reform Bill which became law in 1832 He was Home Secretary in 1835 Secretary for the Colonies in 1839 Prime Minister in 1846 He was Foreign Secretary in the Aberdeen Cabinet which fell in 1855 Colonial Secretary and subsequently Foreign Secretary under Palmerston and in 1861 was made Earl Russell In 1865 on the death of Palmerston he became Prime Minister again, but resigned in 1866

His Work for Education. The long period of the great struggle for an educational system was

adorned by his ceaseless efforts for the people Lord John Russell spoke on the famous Saturday sitting of the House of Commons on 17th August 1833, when the first Parliamentary vote for national education was passed He pointed out, in answer to a complaint that no ground for the experiment had been shown that in the Report of the Select Parliamentary Committee appointed in 1816 to inquire into the education of the lower orders that there were cases given of parishes which if they could have been assisted in the first outlay would afterwards have supported their own schools That was still the case in 1833 and justified a vote for building grants He voted with Mr T B Macaulay for the grant which was duly voted and confirmed by the Revenue Act 1833

From this time onward Lord John Russell was one of the chief moving forces in the creation of a national system of education It is important to trace in some slight detail his efforts while a Minister of the Crown and as a leader of the Opposition On 30th November, 1837 a third Select Committee on Education had been appointed and in its report of 13th July 1838 it states that despite the desperate condition of national education it had rejected by five votes to four a proposal for a Board of Education under the control of Parliament Mr Gladstone was one of the opponents of the proposal Immediately before the report was issued the Treasury had put on foot an elaborate system of school inspection in connection with the small Government grants Lord John Russell on behalf of the Government took up the scheme for a central education authority which the Committee had rejected and proposed in the House of Commons on 12th February 1839 to form a Committee of the Privy Council to administer the Government grants This proposal was apparently due to the direct intervention of Queen Victoria who, according to a dispatch dated 4th February 1839 from Lord John Russell to Lord Lansdowne deplored with deep concern a want of instruction among the poor ' not in accordance with the character of a civilized and Christian nation Lord John Russell pleaded strongly for reform and the Committee of Council was formed by order in Council of 10th April 1839

The fact aroused the greatest controversy and a very heated debate in the House of Commons on 14th 19th and 20th June took place on the question whether the Crown should be asked to revoke the appointment of the Committee of Council as the education authority Disraeli Gladstone and Peel all opposed the formation of the Committee and Lord John Russell s proposal which is the foundation of the whole of our modern system, was only confirmed by a majority of five in a very crowded House 555 members going to the lobbies

The long struggle for a better England was at last fairly gained though it cannot be said even to-day that the reactionaries of 1839 have vanished They no longer however include men of eminence Lord John Russell noted with alarm that the new educational system was not overtaking the havoc of the industrial revolution and on 19th April 1847 he unfolded in the House of Commons his scheme for diminishing what he called ' the Empire of Ignorance by means of an increased grant and the provision of more and better teachers thus extending State help from school buildings to general education The proposals were sanctioned on the third night of the debate, which included a remarkable speech by Macaulay who appealed to a future age which while enjoying all the blessings of a just and efficient system of State education will look back with astonishment to the opposition which the introduction of that system encountered and which will be still more astonished that such resistance was offered in the name of civil and religious freedom

In 1852 Lord John Russell declared that it was time for the local authorities to take up their share of the educational burden and proposed in the House an adoptive Act enabling local authorities to raise rates for education The proposal was rejected despite the optimism with which the introducers regarded the results that education could produce there is a power at work which will draw up from the dregs and destructive part of that society the means of new light new life, new intellegence '

Yet things were at that time going from bad to worse and on 6th March 1856, Lord John Russell laid before the House of Commons twelve resolutions relating to the educational position Of the two million children at school little more than a quarter or one eighth of the number of children in the country between five and fifteen years were subject to inspection Of the children at school two thirds left before the age of nine Lord John proposed an elaborate system of central inspection coupled with a system of local rating Again Gladstone and Disraeli opposed reform, the former declaring that rate aid would be " the death warrant of voluntary exertions ' The Bill was withdrawn but Gladstone s prophecies proved false when rate aid was introduced in 1870

Something however was done The Education Department was formed by order in Council on 25th February 1856 and a Minister of Education was created by statute in the teeth of the bitter opposition of Gladstone, who declared that such a minister could have " nothing to do " He looked for ' educational movements on a different basis He however combined with Lord John Russell in 1857 to introduce the famous capitation grant Meantime educational development went on and the need for a compulsory system became more and more clear

After his retirement from a clever political life, Earl Russell (as he then was) moved in the House of Lords on 2nd December, 1867 four resolutions asserting the right of every creed to education, the duty of the State to maintain that right and the need to organize and develop higher education He declared that national education needed local rates, increased central grants and a universal conscience clause The electorate created in 1867 required education

Finally on the introduction of Disraeli s Education Bill on 24th March 1868, in the Lords Lord Russell asserted the necessity of a rating system and the need for technical education based upon an efficient primary system Lord Russell lived long enough to see the rating system in full play and the beginnings of technical education but the Education Act 1918 was the true finish of his life long efforts for the education of the people Of him it may be truly said that he was *fidelis in partibus infidelium*

J E G DE M

RUSSIA, THE EDUCATIONAL SYSTEM OF

[*It will be obvious that no data are available for a description of education in Russia to day, nor would it be worth while to record the existing state of affairs if the information could be obtained for a settled stage has not yet been reached The following article refers through out to the period immediately preceding the Revolution*]

The system of public education in Russia is not a thing of organic growth It was not gradually built up by society itself through its individual repre sentatives to meet the rising demand of the people for learning It was in the first instance, implanted by the Government and has throughout its exist ence been controlled and directed by the Central Power The first attempt at public education was made by Peter the Great (1689–1725) What little learning existed in Russia before his time was almost entirely limited to the clergy and with rare excep tions did not extend beyond the power to read and write Seeing the practical necessity of education Peter instituted a few technical schools and ele mentary schools both lay and clerical for general education By the end of his reign there was one of each kind in most of the chief provincial towns He also founded a naval and a clerical academy as well as an academy of sciences with a university and a preparatory school attached to it But the university soon ceased to exist from lack both of pupils and teachers The attendance at all schools, indeed was very poor in spite of all efforts to raise it even compulsion being resorted to Within the first hundred years after Peter s death only two monarchs Catherine II (1762–1796) and Alexander I (1801–1825) did anything substantially to increase the number of schools but during the whole of that period the Government endeavoured to attract and to keep at their studies as large a number of scholars as possible Not only was education (little as there was of it) free but at the higher schools students actually received a salary and on com pletion of their studies a certain rank in the service of the Crown But at first Russians showed them selves unwilling to profit by the educational oppor tunities offered to them It was not until the middle of Alexander I s reign that the provision made for primary secondary and higher education began to be appreciated But now a change came over the attitude of the Government It began to see in education a possible source of revolutionary ideas and of danger to the stability of the existing social order The result was a number of measures intended to make education less accessible (*e g* introduction of fees) and to establish a strict control by the State of what was being taught Nicolas I (1825–1855) carried out this policy still further and at no time in the history of Russia was the work of education more hampered than in his reign But the demand for learning was now so great that no restrictions could suppress it and the 1840 s are marked by an unprecedented intellectual activity in the universities

With the accession of Alexander II begins a new era of Russian history The great reforms of his reign have made the Russia of to-day The primary secondary and higher education are now very much what they were in his time the line of development is on the whole one and unbroken though it is subject to many fluctuations dependent upon the changes in the political life of Russia

Organization of Education before the Revolution The whole work of public education is under the control of the State The institution which has special charge of education is the Ministry of Public Instruction and the majority of the existing schools of all grades are under its supervision But a large number of schools and colleges are administered by the Holy Synod by the War Office by the Ministry of Finance etc The general method of educational administration is essentially the same in all the departments of State and that adopted by the Ministry of Public Instruction need alone be here considered The supreme control is vested in the Minister (who held his office by appointment and at the pleasure of the Tzar) For purposes of local administration the whole of the Russian Empire is divided into educational districts (there are thirteen of them at present) each consisting of several adjoining provinces The higher secondary and primary education in each district is supervised by a curator nominated by the Minister of Public Instruction who was appointed by the Tzar The curator is assisted in his work by directors and inspectors whom he appoints in the provinces within his charge In the case of church schools the central authority is the Synod while the Bishop of the diocese plays very much the same part with regard to local administration as does the curator under the Ministry of Public Instruction Speaking generally the machinery of the State control of education may be said to be thoroughly bureaucratic

Elementary Education Almost the whole of elementary education is administered by the Ministry of Public Instruction and by the Synod Primary schools supervised by other departments of State (*e g* the War Office schools for illiterate soldiers) are comparatively few in number Synod schools are slightly more numerous than those under the Ministry of Public Instruction but the number both of scholars and of teachers in the latter is far larger

Although all schools in Russia are State controlled comparatively few of them are State maintained The Zemstvo (the organ of local self government) does more than any other public body in providing primary schools and until quite recently it received practically no grants from the Treasury for doing so Church schools receive more Treasury grants than any other schools but even they are largely dependent upon funds obtained locally Since 1905 the Duma voted that a sum of 10 000 000 roubles should be added yearly to the State expenditure on education and now Russia is rapidly approaching to universal education which has hitherto been impossible because of the scarcity of schools

Russian primary schools may be roughly sub-divided into the lower and the higher The great majority are of the former type and among them may be specified schools of a still more rudimentary character (the reading and writing ' schools supervised by the Synod) Ninety per cent of all schools for children are country schools All ele mentary education is free and the lower primary schools are almost without exception co-educa tional The proportion of girls to that of boys is approximately 1 to 4

The various types of *lower elementary schools* differ considerably with regard to their organization but there is great uniformity in the methods and subject matter of instruction The village school maintained by the Zemstvo is the normal type, to which other schools tend to approximate It has a three (sometimes a four) years course the completion

of which reduces the term of military service from six to three years The age at which children enter school is between 10 and 11

The number of working days is not more than 160 in the year as from early spring till autumn peasant children work in the fields The school hours are usually from 9 to 3 but there is no fixed rule The number of pupils is not supposed to be more than fifty per teacher but sometimes it is as much as ninety The subjects taught are religion (which is an obligatory subject in every educational establishment in Russia and is taught by the local priest) Church singing Russian and Church Slavonic arithmetic history and geography The children learn to read and write correctly obtain some knowledge of grammar (parsing and syntax) master the four rules of arithmetic simple fractions (decimals may but need not be learnt) simple interest square cubic and other Russian measures learn the most usual prayers the Creed and the Ten Commandments the chief incidents in the Old and the New Testaments and read the Gospel in Slavonic they also learn some Russian history and some general geography from prescribed text books In all primary schools practical subjects such as gardening needlework etc may be taught if there is a demand for it

The only examination is held on leaving school and is chiefly oral Inspectors members of the local Zemstvo or other persons connected with the school or with the administration of the district act as examiners the teacher always being present

To teach in primary schools under the Ministry of Public Instruction it is necessary to hold the diploma of a secondary school or a certificate obtained on passing a special examination

Two thirds of the elementary teachers are women who are as a rule superior to men as regards their class and education The teachers salaries are paid by the Government and begin at 30 R (three guineas) per month to which 5 R a month is added after every five years service the maximum salary being 50 R per month Rooms fires and lighting are also provided After twenty five years service (or after fifteen if retiring through illness) teachers are entitled to a pension equal to their salary

The immediate supervision of schools is entrusted to inspectors of whom there generally is one in each district Inspectors are supposed to help inexperienced teachers with advice and generally to further the efficiency of their work But with some individual exceptions their chief concern is that no departure from the official programme should be made and no books—however good—be used in schools except those mentioned in the official programme The officials next in rank to the inspectors are the directors—there is one in each province The court of appeal from the decisions of the inspector or the director is the school council of the district or of the province which includes representatives of the Zemstvo and some elected members If the *personnel* of the council is a good one it can do a great deal to protect the interests of the teachers and to promote the work of the schools

As already said the curriculum of primary schools other than those of the Zemstvo is essentially the same the chief difference being in the range and the thoroughness with which subjects are taught In the Synod schools, more attention is paid to Church singing and Slavonic but on the whole, the teaching is less efficient than in the lay schools They are administered by the clergy the teaching being done by the local priest and deacon or by men and women teachers trained in clerical colleges and schools The teachers are paid less than in the lay schools and are as a rule of a less intellectual type

Higher Primary Education (for boys only) can be obtained in the district and urban schools and in the model ministerial schools all of which are partly supported by the State These schools have a five or a six years' course the first two (or three) years covering the same ground as the lower primary school and the latter years being devoted to more advanced work The subjects include religion Russian and Slavonic arithmetic elementary geometry geography history handwriting drawing natural history physics Commercial and technical subjects are sometimes also taught The higher primary schools are hardly accessible to peasant children for the district and the urban schools are found in towns only and the ministerial schools, which are opened in the country, are as yet few in number But their number is increasing and it is proposed to make their programme equal to that of four classes of a secondary school and thus enable peasant children to continue their education beyond the elementary stage without breaking away from their home or getting out of touch with the rural life Until however this plan is carried out it must be said that the great defect of Russian primary education is that it does not lead on to the secondary and so far no effort is made by the State to pick out clever children in elementary schools and enable them to continue their education Whatever is being done in this respect is due entirely to private initiative

Secondary Education for Boys Secondary education of a general character can be obtained by boys in (1) gymnasia and pro-gymnasia (2) Real schools (3) ecclesiastical schools and seminaries, (4) cadet corps (1) and (2) are day schools under the control of the Ministry of Public Instruction (3) are administered by the Synod and (4) are boarding schools maintained and supervised by the War Office

Gymnasia pro-gymnasia and Real schools are maintained either by the State or by private persons or associations The fees paid by pupils in State schools usually amount to 60 R (six guineas) per year but private schools are more expensive A number of boys (some 15 or 20 per cent) are admitted either free or at reduced fees It is unusual for boys of aristocratic families or from the higher bureaucracy to be sent to gymnasia or Real schools The pupils are mostly sons of professional people or of clerks in the Civil Service but the number of children from the lower classes is steadily increasing

GYMNASIA have an eight years course plus a preparatory class and the Real schools a seven years' course the course of a pro-gymnasium is equal to four classes of a gymnasium The normal age of admission into the lowest class is ten years The completion of the course in the gymnasium or in the Real school reduces the term of military service to one year only the diploma of the former gives the right of entrance to the universities and that of the latter to the higher technical colleges The extreme importance of the diploma for the future career of the pupils largely results in both the pupils and their parents caring more about the diploma than about the intellectual advantages of

secondary education The organization of the two kinds of school is practically the same At the head of each stands a director appointed by the curator of the educational district he is assisted in his duties by an inspector Both take part in the teaching The whole staff of the school forms a pedagogical council which meets once a month to discuss the progress of the pupils etc The teachers are appointed by the curator they must hold a university degree or an equivalent diploma Each teaches some one—or, at most two—subjects and his salary depends upon the number of lessons given It ranges from about 1 800 R (£180) to 2 200 R (£220) per annum Director and inspector receive 2 000 R and 1 500 R respectively with residence In the Real schools the salaries are somewhat higher Teachers in State schools are regarded as civil servants and have a certain position assigned to them in the scale of ranks They are exempt from military service and after twenty five years work are entitled to a pension to the amount of their salary

The subjects taught in gymnasia are (1) Religion (2) Russian and Slavonic (3) Latin (4) Greek (5) mathematics (6) physics (7) history (Russian and universal) (8) geography (9) French and (10) German (only one of these languages being obligatory) (11) calligraphy (12) drawing (13) logic

The curriculum of the REAL SCHOOL is essentially the same but no classical languages are taught and both modern languages are compulsory instead of logic natural history is taken, commercial subjects may be taught in the higher classes more attention is devoted to mathematics and physics and less to literature and history than in the gymnasiums

ECCLESIASTICAL SCHOOLS AND SEMINARIES are intended for the children of the clergy who are admitted free of charge but are open to others on payment of a fee The schools are maintained by funds collected locally but the seminaries are maintained directly by the Synod the course at the seminaries (six years) presupposes the four year course at the ecclesiastical school Most seminarists take holy orders and fill the ranks of the parish clergy the best pupils go on to the ecclesiastical academies and subsequently occupy the higher posts in the Church some go on to one of the three universities (Tomsk Dorpat or Warsaw) which admit students from the seminaries The curriculum of the seminary includes the subjects taught in gymnasia plus some other subjects important to those intending to take holy orders But the teaching is not as a rule so efficient as in the lay schools

The CADET CORPS give a general education to boys intended for the military profession and prepare them for a more specialized course in the higher military colleges They have a seven years' course which is very similar to that of the Real school no classical languages being taught

The organization of the seminaries and the cadet corps is analogous to that of the gymnasia except that the rector and most of the teachers in the former must be in holy orders and have theological degrees and in the latter they must be military men

Secondary Education for Girls Girls obtain secondary education in (1) institutes (2) gymnasia (3) diocesan schools The institutes are boarding schools with a seven years course for daughters of gentlemen, and are maintained by the State gymnasia are day schools with seven or eight years' course open to all classes and maintained either by the State or by private persons the diocesan schools are day schools with a seven years course for daughters of the clergy but open to other classes and maintained by funds raised by the local clergy The completion of the course in any one of the schools gives a right to teach in primary schools while the diploma of eight classes of a gymnasium gives the right to teach in secondary schools The curriculum of the girls gymnasium is very similar to that of the boys but no classical languages are taught and several other subjects, such as pedagogy needlework etc are included A great number of gymnasia for girls are private and they are as a rule far superior to those maintained by the State

The course at the institutes is almost the same as that at gymnasia but the teaching is on the whole less efficient This is still more the case with the diocesan schools which have besides a much narrower curriculum The organization of girls' schools is similar to that of boys and the fees are almost the same

Among secondary schools providing special education must be reckoned medical schools for doctors assistants and schools for the training of primary school teachers Many of the latter however (*e g* those kept by the Synod) are little better than higher primary schools

Higher Education This is provided for men in universities (non residential) and in several institutions which give instruction up to university standard in some one faculty only Some of these are secondary and higher schools combined and are residential (*e g* the Imperial School of Zau) Women obtain higher general education at the Higher Courses for Women in Petrograd and Moscow, and medical at the Women s Institute of Medicine in Petrograd For higher education in theology there exist four ecclesiastical academies and for the advanced study of military and naval science four military and one naval academies

All the universities are maintained by the State Students fees are fixed by law and may not be altered except by special legislation Each student pays 50 R (five guineas) per annum for the right of admission to the university he also pays to each professor whose lectures he attends 1 R or more a year according to the number of times per week the professor lectures On the average the fees amount to about 100 R per year no extra fees being charged for examinations But some 20 per cent of the total number of students are excused their fees and a great many receive bursaries either from the State or from private persons Numbers of students earn their living by coaching and many live in extreme poverty Members of the aristocracy or the higher officials do not as a rule send their sons to the universities they are generally educated at the aristocratic residential schools

The subjects taught in each faculty are divided into several cycles any one of which a student may choose and in addition to which he has to take certain subjects that are compulsory for all The too great number of subjects necessarily leads to superficiality in the treatment of them The number of lectures to be attended amounts to at least twenty four and usually to 36 38 or 40 hours per week plus practical work But most students take advantage of the fact that the attendance at lectures is not obligatory Examinations—other

than the final—are held either at the end of two sessions or at different times fixed by the respective professors and are almost exclusively oral If a student fails he comes up to be examined once—or several times—more the maximum time for graduation has recently been limited to six years the minimum being four years in all faculties except that of medicine which has a five years course The examination (oral) for the first degree is held by the so-called State Commission consisting of the chairman appointed by the Ministry of Public Instruction the professors and the *privat docents* Previously to the final examination, or during the six months following it the candidate must submit to his professor an essay which to be accepted must be pronounced by the latter to be "very satisfactory" The completion of a university course carries with it important privileges in the Civil Service and there is no doubt that this fact attracts to the universities men who would not otherwise have sought higher education

The next examination is for the degree of Master (or in the faculty of medicine for the degree of Doctor) and may be taken at any time subsequent to the first After passing a *vivâ voce* examination in his special subject and in several others the candidate is called a *magistrant* and may become a *privat docent* after delivering two specimen lectures pronounced satisfactory by the faculty To obtain the degree of Master he must publicly defend a written thesis submitted to and approved by the faculty The degree of Doctor is bestowed by the faculty for a thesis which is an original contribution to learning and shows a complete mastery of the scientific method it too must be publicly defended The Doctor s degree gives the right to a professorship of which it is an indispensable condition Professors are entitled to a Government salary of 3 000 R (£300) and a pension of 3 000 R after a period of twenty five years from their first degree All the university professors form a council which decides upon academic and administrative matters and elects the rector pro-rector and deans subject to confirmation by the Minister of Public Instruction His sanction is also necessary for the election of professors to the different chairs The immediate control of the universities is in the hands of the curator

The Higher Courses for Women have two faculties only—arts and science—which are terribly overcrowded The instruction provided is practically the same as in the universities the teaching being largely done by the same professors but women do not obtain degrees In contradistinction to universities the higher courses carry no privileges with regard to public service and are maintained out of private funds They are nevertheless controlled by the Ministry of Public Instruction and their organization is essentially similar to that of universities

Technical and Commercial Education The provision for technical and commercial education in Russia is rapidly increasing but is still very insufficient The want is particularly felt with regard to lower technical instruction For the training of skilled artisans there exist some 200 schools most of which are supported out of private funds They have a three or four-year course and are open to persons who have worked for two years in a factory, and to boys between the ages of 11 and 15 who have finished at a primary school But the divergence between the curriculum of the primary school and of most of the technical schools in which subjects like technology and physics are taught is so great that it seriously hinders the efficiency of the latter The work of the lower agricultural schools is more successful There are about 200 of them, and the number is increasing rapidly The fees in most technical schools do not exceed 20 R (two guineas) per year, sometimes being as low as 3 R (6s)

There are but few intermediate technical schools They generally have a four year course, and there is a good deal of difference in the standard required for admission The most successful are schools which combine general with technical instruction

The HIGHER TECHNICAL COLLEGES are about twenty in number They are intended for the training of engineers skilled chemists, teachers of applied science and of persons competent to occupy responsible posts requiring technical knowledge They are open to young men with the diploma of the Real schools gymnasia cadet corps, commercial schools etc As the vacancies are but few, the entrance examinations are competitive, and at least one-third of the applicants are turned away Most colleges have a five years course, comprising a great number of subjects The staff consists of professors and other teachers The higher technical colleges are under the control of various ministries, but their organization and system of work is essentially similar to that of the universities The students fees and the professors salaries are somewhat higher than in the latter All higher technical colleges are maintained by the State and most of them are non residential

It must be noted here that all places of higher instruction whether technical or general, are characterized by the lack of academic corporate life among the students The students are forbidden by law to form any associations for literary, scientific social or economic purposes and the inevitable disregard of this law is an abundant source of trouble for them

All COMMERCIAL SCHOOLS (with two exceptions) are under the control of the Ministry of Finance, and are mainly supported by local funds They enjoy greater freedom from State interference than any other Russian schools and are rapidly growing both in efficiency and in numbers They are of four types (1) Commercial schools (2) business schools, (3) business classes, (4) courses in commercial knowledge The latter give advanced instruction in special subjects are open to persons with secondary education and are intended chiefly to train teachers for the different kinds of commercial schools Business classes generally held in the evenings, afford shop assistants and others an opportunity to improve their commercial or their general education Business schools have a three years' course which presupposes that of a higher primary school, and are intended for the training of clerks and other subordinates in business houses General subjects play an important part in their curriculum Commercial schools have a seven years course, which covers approximately the same ground as that of the Real school, commercial subjects being taught only in the last year or two They provide excellent general education and owing to their comparative freedom from bureaucratic routine, are extremely popular They are largely attended by pupils who are not intended for a commercial career and subsequently go on to the higher technical colleges N A D

RUSSIAN LANGUAGE, THE TEACHING OF THE —The Russian language has hitherto received very step motherly treatment at all hands foreigners have regarded it as terribly difficult and the Rus sians themselves have until comparatively recent times treated it with a contempt as barbaric as unrefined In the eighteenth century everybody who was anybody wrote French and so little did exalted Russians know their own language that the Emperor Paul conferred on Souvorov the great Russian general who had defeated the French in the Italian campaign the ungrammatical title of *Graf Souvorov 'Italiisky* During the best part of the nineteenth century the Russian Foreign Office refused to employ Russian at all and even published its official organ the *Journal de St Pétersbourg,* in French Of course in the seven teenth and eighteenth centuries the French language was the universal language of society throughout the civilized world and as it is to day the language of diplomacy The first country to revolt against the linguistic tyranny of France was Germany, and by Germany we mean Prussia It is now the turn of Russia After all the old Empire of Russia next to that of Great Britain was the largest in the world it had a population of 180 000 000 more or less and although among these many millions a number of alien races were included yet the Russian language was the native tongue of the vast majority and prevailed from Petrograd to Vladivostock and from Archangel to Odessa Moreover Russia is another America it is absolutely self contained and can supply itself with all its requirements all it lacks is the experience which comes of centuries of industrialism and the technique which is the product of that experience Necessity is the mother of invention and to their great surprise the Russians have discovered that they can get along quite well without the aid of German chemists and German clerks

If Russian were more difficult than Chinese it would still be our duty to learn it because for the future the Russians mean to speak and write their own language in their own country and because the two greatest empires in the world must learn to understand each other and to have mutual [redacted] which shall link them together It is by [redacted] that this can be brought about [redacted] that a sound foundation can be laid for a permanent alliance and friendship Hence we British must learn Russian more especially as the leaders of Russian life its aristocracies of birth and intellect have already paid us the compliment of learning English The Russian language is not difficult, however that is to say not difficult in the sense in which Chinese for instance is difficult It is certainly far less difficult to write correctly than either French or Italian With regard to French the contemporary literary men of France maintain that the French people have entirely lost the art of writing grammatical French

Pronunciation But Russian is quite easy to write it is easy to read for the spelling is phonetic, and there are even two sets of signs which are appended to all words ending with a consonant in order to indicate whether the last syllable should be pronounced with Italian softness or with German resonance Let us take an example the word *on* which signifies "he it is pronounced as it is written hard and firmly without elegance On the other hand the word *ogon* which means "fire has a soft sign after it and is pronounced as though it was spelled *ogoynyh* I give the final *yh* to sug gest the soft inflection because of course the two signs are mute There is another slight difficulty regarding pronunciation and that is the difficulty of knowing exactly on which syllable to place the accent in talking In French there can never be any doubt as to this but in English it is so difficult and arbitrary that there are many very well educated English people who make mistakes or shall we say who vary the accent Take for instance the word *interest*, should the accent be on the first or the last syllable ? When interest becomes interesting, we find frequent diver gencies of accentuation But if we chance to visit the States we shall hear everybody speaking English as seemeth right in his or her own eyes It is a free country

In Russian polysyllabics are generally composite words and if you know the root word the rest is easy Take the word *Vladivostock* this is com posed of two words *vladi*, the imperative singular of 'rule and *vostock* the East' Hence the word means "Rule thou the East' and the accent is consequently placed on the last word The word *vostock* is pronounced *vastóck* the first *o* not being accentuated loses its fullness and is slurred over Consequently we know that *Vladivostóck* has its accent on the last syllable When we come to the names of people we shall find the pronunciation not always so easy to determine generally speaking however there are certain simple rules to which of course there are a few exceptions But practice makes perfect and while Germans no matter how well they speak the language occasionally betray their origin by false quantities and the German accent Englishmen and more particularly Scots men who have more than an elementary knowledge of Russian speak the language faultlessly an accomplishment which Germans and of course Frenchmen never acquire

The Alphabet The most difficult thing about the Russian language is beyond doubt the alphabet On a superficial glance the letters do not vary greatly from the Latin character but when we come to examine them we find they are all entirely different *P* stands for *R* and *H* stands for *N* while the very honest looking capital *B* is a *V* One of the remarkable phenomena of the Russian alphabet is that in spite of its far too many cha racters it has no *W* and yet we constantly see names like *Wladimir Warontzow Moscow* some of them quite unpronounceable The reason is far more simple than many think it is that the German V is identical with *F* and that the poor Germans use the *W* to indicate the *V* sound Hence when ever a Russian word is seen spelt with a *w* in transliteration it is certain to have reached us viâ Germany or through German influence and should, therefore be regarded with suspicion

The Russian alphabet has too many letters but more especially too many vowels To begin with there are always two sorts of vowels the soft vowel and the hard vowel There is *a* which is Italian in fullness but there is also a *ya* or soft *a* there is a guttural *ı* which looks like *61* and there is the soft *ı* and so on Then there are two *f* s the *ph* and the ordinary *f* There is a hard *g* and a soft *g* and there is a special letter for *ts* besides a *z* and an *s* but there is no *c* only a *k* On the other hand there are quite a number of sibilant letters, as they are called there is an *sh* a *tch* an *stch* but there is no *H* and the *X* is guttural, as in

Spanish This is transliterated by the Germans with 'ch" and by the French with 'Kh" While the multiplicity of vowels may seem a difficulty it really greatly simplifies the language, for it does away with all diphthongs

Grammar When we turn from the alphabet to the grammar we find that the difficulties tend to increase Like the Latin language Russian has no article The gender is determined by the termination there are however more cases than in Latin Russian which is what is called a highly inflectional language has an instrumental case The use of the dative is moreover used somewhat strangely but there are rules for this, and little peculiarities of language, provided they are subject to rule are not really difficult But when we come to the verbs, we may be staggered by their irregularity, and what are called their aspects It is a curious fact that in nearly every language certainly in every language known to the writer, the verb "to be" is irregular but in Russian its irregularity is almost vicious For instance the first person singular of the present tense I am' does not exist or rather it does exist but has become archaic and is never used This is indeed, the real difficulty of Russian there are notably in conversation so many eliminations so many words which are not contained in the sentence but which nevertheless have to be assumed to be present An instance will suffice the word *idiót* standing by itself means a whole sentence it means he is coming

If the verbs are a little perplexing their peculiarities are easily acquired by practice and in learning the Russian language it is important to bear in mind that theoretical teaching must be supplemented, as in the case of French though for a different reason by practice in conversation The syntax is straightforward

After all the Russian grammar like the German and English grammars has scarcely been discovered We know that the Latin grammar was invented by Greek slaves who at the instigation of their Roman masters adapted the Latin language to the Greek grammar It did not quite fit but it answered its purpose, the Greek grammar being the finest in the world and the most logical Other European languages have suffered, however by being stretched not on the perfect and logical bed of the Greek grammar but on the practical and less scholarly Latin adaptation of it This has resulted in a number of pathetic misfits which philologists have only recently endeavoured to correct In England our old friend Lindley Murray has at last been definitely thrown over but before his advent the English grammar was not taught at all Hence our classics teem with grammatical errors and some of our most learned authors especially in the eighteenth century wrote what was virtually an Anglicized Latin

Development of the Language Very much the same happened in Russia where church Slavonic practically identical with modern Bulgarian was the only literary language Peter the Great emancipated Russia from priestly control and compelled the nobility to become literate His daughter, the Empress Elizabeth who did not succeed to the throne until sixteen years after his death, felt the necessity of a Russian grammar, and Lomonossoff, the poet and scientist, was commissioned to supply the want Lomonossoff was a man of very remarkable and original intellect but he could not be expected to anticipate the labours of modern philologists, he, therefore, followed the general custom of the time, and adapted the Russian language to the Latin grammar In those days the official style of Russian documents was absurdly stilted and almost unintelligible because it was considered correct to imitate the Latin syntax and to place the verb at the end of a sentence which seemed interminable Since then, great progress has been made, and such writers as Pushkin Gogol and Tourguéniev have done much to give Russian its present beautiful flexibility Considering the recent date of Russia's Renaissance she has a wonderful literature and amongst her writers there are giants whose works alone repay the trouble of learning the language

E A B H

RUSSIAN IN ENGLAND, THE TEACHING OF.— It is not surprising that so difficult and remote a language as Russian should hitherto have been accorded very little attention in this country

Again for some inscrutable reason Russia has always been looked on as the arch-enemy of Great Britain Thus being the language of a people Englishmen were taught to regard with suspicion and dislike known to be inherently complicated and difficult and thought to be barbarous and unpronounceable Russian was discredited from the start

Yet it is not too much to say that Russians have almost always been amongst the most pronounced Anglomaniacs except at periods of acute international tension And Englishmen are really not nearly such bad linguists as they like to think themselves As soon as an Englishman gets away from the embarrassing presence of critics and ladies he loses his self consciousness and is capable of performing remarkable linguistic feats one has only to think of how Englishmen master difficult Oriental languages in Egypt India etc

One of the most encouraging features about the study of Russian is the undoubted fact that the British have far greater natural facility in the pronunciation than have either the French or the Germans

The importance and utility of Russian is now so patent that the point does not need to be laboured. Owing to the spread of education to the rapid growth of industrialism and the formation of a vast middle and professional class, many of whom have no leisure to acquire foreign languages, Russian has come into its own in its own country in a marvellous way It is now impossible to travel or do business in Russia to any good purpose without a knowledge of Russian The present century will witness the development of the immense and practically virgin territories of Siberia and probably the extension of Russian influence in other directions also

Germany long ago perceived the importance of the Russian language and thanks largely to the efforts of its commercial schools secured the monopoly of a large portion of Russian trade and the control of many factories in the country A unique opening is now offered to England to establish its commercial supremacy in Russia The greater distance of our factories is compensated for by the relative cheapness of maritime transit and the opening of an ice free port in the extreme north of Russia and the construction of new railways will make our steamers independent of the climatic and political hazards of the White, the Baltic and the Black Seas

Direct connection between Great Britain and Russia dates from the sixteenth century, when the sea route to Archangel was opened by Richard Chancellor During the reign of Peter the Great intercourse between the two countries became more frequent, and had already become less circuitous The sojourn of Peter in England naturally aroused interest in the land of his origin and in 1696 the first Russian grammar by one Henry Ludolf was printed at Oxford, the type with which this book was printed is preserved at the Clarendon Press

From the seventeenth century onwards active interest was taken in Russia by people in England and Scotland which manifested itself in emigration from our island to Russia for purposes of military and commercial enterprise these were the fore runners of the large British factories and colonies which have been in existence in Russia ever since those days But this interest was con fined to a limited class of people who handed on their knowledge of Russia and their Anglo Russian traditions from generation to generation

The connection between the Slavonic languages and the other European groups and the place of Russian in the group of Slavonic languages were only recognized in Central Europe and in Russia itself during the first half of the nineteenth century so it is not surprising that it was many more years before these facts were realized in this country

From the educational point of view the first ripple on the placid waters of British indifference to Slavonic affairs was the Ilchester bequest Lord Ilchester bequeathed to the Taylor Institution at Oxford a sum of money the proceeds of which should be spent on the encouragement of the study of Polish and other Slavonic languages literature and history In 1870 this fund was formally accepted by the University and the objects of its administration were described as follows (1) The delivery of lectures on subjects connected with the Slavonic languages or literature or the history of the Slavonic nations and (2) the bestowal of prizes or exhibitions for encouraging the study of those subjects

Mr W R Morfill of Oriel College was appointed to deliver the first series of lectures which were given under the title 'The Ethnology Early His tory and Popular Traditions of the Slavonic Nations during the Michaelmas Term of 1870

In 1874 Mr W R S Ralston the well known writer on Russian folk lore and translator of Rus sian works delivered a series of four lectures on "Early Russian History Other series were given at intervals by both Englishmen and foreigners learned in Slavonic matters The interest aroused in Oxford by this branch of study may be gauged from the fact that in 1900 when Professor Sigel of the University of Warsaw gave four lectures on Slavonic Law the audience consisted of the Pro fessor of Russian and the Librarian of the Taylor Institution At recent lectures however the audience has been distinctly more numerous

Meanwhile in 1889 the University had appointed Mr Morfill the greatest Slavonic scholar in Great Britain Reader in Russian and the other Slavonic languages In 1900 he was made Professor, a title which lapsed with his death in 1909

Mr Nevill Forbes was appointed Reader in Russian in 1910 and was reappointed Reader in Russian and the other Slavonic languages in 1915 The post is maintained partly by the University and partly by the Taylorian Foundation

During Professor Morfill's tenure of office, the Honour School of Modern Languages was definitely established, and in 1904 largely owing to his exertions, Russian was added to the languages (French German Italian and Spanish) already forming subjects of examination in that school The syllabus for any language in this school is (1) the language as spoken and written at the pre sent day (2) works or portions of works written in the language, (3) the history of the language, (4) the history of its literature and (5) a special subject of language or literature Under (1) is included a *viva voce* examination in three parts viz dictation reading aloud and conversation

The scheme of papers is the following (1) Trans lation from English (2) history of the language, (3 and 4) early prescribed texts and questions thereon (5) Gospel of St Mark in the Ostromir Codex and unprepared translation from early Russian authors (6 and 7) history of the literature [in both these papers candidates are expected to show such knowledge of the political and social history of Russia as shall be necessary for the profitable study of its literature, and all the ques tions in one of the papers have to be answered in Russian] (8 and 9) modern prescribed authors and questions thereon (10) special subject

Besides the collections of Slavonic books in the Bodleian and Taylorian libraries which are both somewhat meagre Oxford possesses a most impor tant asset in the Slavonic library containing nearly 8 000 volumes at Queen's College to which it was bequeathed by Professor Morfill

In 1917 scholarships specially for Russian with preference for boys from Cheltenham were founded by Mr Laming at Queen's College Oxford and one of these is offered every year

In London in 1887 it was proposed that a School of Modern Oriental Studies should be established as a branch of the Imperial Institute in London, and in 1889 with the co operation of King's Col lege and University College which since their foundation had taught certain Oriental languages this school was created in name the teaching still being done at the two colleges King's College had not hitherto taught Russian but it was sandwiched in amongst various Asiatic languages and Mr Orloff a distinguished graduate of the Ecclesiastical Academy in Petrograd who had been appointed teacher of Russian at the Imperial Institute in 1887, was transferred to King's College and appointed Professor the title given to all heads of depart ments On the incorporation of King's College in the University in 1910 Professor Orloff became a "recognized teacher of the University Russian can now be taken as one of the subjects for the Intermediate Arts and B A (ordinary degree and honours) and also for the M A degree

Professor Orloff resigned his post in the autumn of 1915 and he died in December of the same year Before his death a School of Slavonic Studies was established within King's College University of London It was inaugurated on 19th October 1915, when Professor Masaryk late Professor of Philo sophy in the Czech University of Prague delivered a lecture on "The Problem of Small Nations in the European Crisis In this school Professor Masaryk was appointed Lecturer in Slavonic Literature and Sociology Dr R W Seton Watson Lecturer in East European History Mr M V Trofimov, Lecturer in Russian and Mr S Tucić Lecturer in Serbian In 1918 Sir Bernard Pares was appointed

Professor of Russian Professor Masaryk having become President of Czecho-Slovakia, in 1919, Mr Trofimov's place was taken by Baron Meyendorff and Mr Tucić's by Mr D Subotić Ph D Thus the teaching of Russian has been properly established freed from the misapprehension which its inclusion in a School of Oriental Studies inevitably implied

At Cambridge, the teaching of Russian began in 1900 when a lectureship was established by the generosity of Sir David Salomons, Bart Mr A P Goudy (who since 1896 had been teacher of Russian to the student-interpreters sent by the Government to Cambridge) was appointed lecturer In 1905 it was converted into a University Lectureship, maintained partly by the Fishmongers Company and partly by the University

Russian was included in the subjects for the Modern Language Tripos in 1907 The student at Cambridge must offer two languages at Oxford, only one The Russian papers at Cambridge therefore, number only five of which the scheme is as follows (1) Passages from Russian writers beginning with the nineteenth century for translation with questions on language and metre (2) subjects for original composition in Russian bearing on Russian literature history or institutions (3) passages from English authors to be translated into Russian (4) questions on Russian literature from the beginning of the eighteenth century with special reference to selected authors (5) *either* passages from selected works of Russian literature earlier than the eighteenth century for translation and explanation with questions on the elements of historical Russian grammar metre and literary history *or* questions on the outlines of the history of Russia (including social political and ecclesiastical institutions) especially in the nineteenth century Every candidate must have previously presented himself for the Oral Examination which is similar to that at Oxford

Russian was recognized as a subject of study in the Universities of Manchester and Liverpool simultaneously in 1906 Dr W J Sedgefield Professor of English assumed the duties of Russian lecturer at Manchester the course is not designed for a degree, but students of Economics are allowed to take Russian as one of their necessary foreign languages In 1919 Dr Sedgefield resigned these duties and the University having created a Chair of Russian Mr Trofimov was appointed Professor

At Liverpool University Russian has received more attention than anywhere else in the United Kingdom In 1906 Professor Bernard Pares was appointed Reader in Russian and next year the School of Russian Studies was founded In 1919 Dr A Bruce Boswell who had for some years been connected with the School was appointed Professor in place of Sir Bernard Pares since 1918 Professor of Russian at King's College, University of London Amongst its other activities the School issues *The Russian Review* a quarterly devoted to Russian history politics economics and literature It possesses a Russian library of 4 000 volumes The staff includes (1) Professor of Russian Language, Literature and History (2) lecturer in Russian Economics (3) lecturer in Russian Laws and Institutions (4) lecturer in Polish History and Literature and (5) lecturer in the Russian Language and Literature, and also Russia can be selected for economic study for the degree in Economic Science Candidates for the degree in Commerce may take Russian as a special subject in the second and third years of the course Under the head of Russian, the student may select two of the following for the ordinary degree course in Arts (1) Language and literature, (2) history, (3) economics These also may be taken without any others for the University certificate Students are helped to obtain teaching posts in Russia or posts connected with Russian trade Attendance is required as follows six hours a week during the first and second years and four during the third Students attend a course of Phonetics for at least two terms and approved courses, covering two years in Economics English Literature or Language or Philosophy Russian has also been taught, since 1914, in the Universities of Birmingham (Dr L Segal, lecturer) Sheffield (Mr G A Birkett lecturer), and Leeds (Mr Kolny Balotzky, lecturer) and in the University Colleges of Nottingham (Mr Slepohenko, lecturer) and Newcastle-upon-Tyne (Mr Coundouroff, lecturer) There are also Russian lectureships at Glasgow and Edinburgh Universities

In the City of London College the teaching of Russian was begun in 1908 from 1908–1914 the average attendance was 30 but in 1914–1915 the number rose to 150

In the Manchester Municipal School of Commerce Russian has been taught since 1900, in the Liverpool High School of Commerce since 1906

Of the English public schools Oundle Tonbridge, and Eton have taken up the study It is optional, but judging by results the subject is popular and its teaching successful

In London a great many commercial institutes under the L C C, besides such institutions as the various Polytechnics and the Central Y M C A have set on foot classes in Russian which are well attended The classes are held in the evening, meeting once or twice a week

In the provinces besides places already mentioned Russian is taught at Bradford Brighton, Stoke on Trent Widnes and Wolverhampton and numerous classes have been opened both in London and in the provinces under the auspices of the Russia Society A course of elementary Russian was started in the University of Edinburgh in 1916, and it has been taught at evening classes held in the Royal High School since 1908, it is also taught in George Watson's College In Glasgow classes were instituted at the Glasgow and West of Scotland Commercial College in 1900 but after two years came to an end In 1915 they were revived and Russian now forms part of the regular curriculum In Dundee Russian is taught at the Harris Academy Evening School A committee appointed by the University of St Andrews is planning the definite establishment of the teaching of Russian in that university and also in Dundee in co operation with the Dundee Chamber of Commerce Elsewhere in Scotland Russian is being taught at Elgin, Ayr Greenock Leith and Paisley

In Wales Russian classes were started at Cardiff Technical School in 1915

Thus although Russian has not yet become an integral part of school curricula in this country, it is a recognized subject of study in the principal universities and in very many commercial and technical colleges N F

RUSSIAN UNIVERSITIES.—The universities of Russia were all founded by the Government, whose primary idea was to make them subservient to the

needs of the State None of them is earlier than the reign of Peter the Great

When at the beginning of the eighteenth century Russia first came in contact with Western civilization great reforms became necessary and to put these into practice intelligent and educated workers were needed the universities were chiefly intended to supply this want Every change in the political life of the country has therefore affected their position The turning points in their history have been the following—

1 The university statute of 1804 (Alexander I) granting them considerable freedom

2 The statute of 1835 (Nicholas I) curtailing the privileges conferred by (1) and abolishing academic freedom

3 The liberal statute of 1863 (Alexander II) granting them self government

4 The reactionary statute of 1884 (Alexander III) abolishing the self government granted by (3)

The last statute is still in force though since 1905–1906 there has been a *de facto* return to the law of 1863

The statute of 1884 transferred administration and discipline from the University Council to officials appointed by the Minister of Public Instruction who appoints also the rector and the professors The students were forbidden to hold meetings present petitions etc These measures cause great friction between the authorities and the students and teaching staff disorder and strikes (or non attendance at lectures) are a characteristic feature of Russian university life

The total number of students of the ten universities was 34 738 in January 1913

The University of Petrograd The first university was founded by the widow of Peter the Great in 1726 in association with the Academy of Science For some years it led a precarious existence and was at length closed for lack of students Alexander I re opened it in 1819 placing it under the jurisdiction of the newly created Ministry of Public Instruction Political reaction which replaced the liberal tendencies of the early part of the reign had a bad effect on the instruction thus in 1821 four professors were dismissed because it was said that they did not teach in accordance with the doctrines of Christianity No chairs were filled by professors who had graduated abroad and students were not allowed to complete their studies in foreign universities Only 365 students completed their studies at Petrograd between 1819 and 1837 But with the appointment of a new principal an era of activity opened for the University Though the statute of 1835 deprived it of many of its privileges great scientific progress was made In the fifties the students were allowed to hold meetings and discuss their own affairs within the University walls A students magazine was also published Russian scholars returning from abroad brought new life and interest into the University But the general political upheaval caused unrest among the students and new regulations were introduced regarding attendance silence in lecture rooms etc These restrictions caused discontent disorder followed and reached an acute stage and the University of Petrograd was again closed in 1861

The statute of 1863 inaugurated a period of great intellectual development in the University The Government made a grant of about 100 000 roubles (£10,500) a year towards maintenance Laboratories and museums were re organized libraries multiplied, and new learned societies founded

Moscow University The University of Moscow was founded in 1755 Most of the first professors were Germans and the University was organized according to German models The lectures were delivered in Latin Three years after its foundation the University had only 100 students Gradually Russian professors were appointed and there were five of them in 1767 During the political reaction of 1789–96 caused by the French Revolution the standard of instruction was lowered and things improved only after the University statute of 1804 To increase the social influence of the University public lectures were organized which were very well attended The University made rapid progress in the first half of the nineteenth century reaching its most brilliant period in the forties It became the centre of Russian intellectual life a position it has retained ever since Many scientists of European reputation have been students at Moscow

In connection with the University there exist a society for assisting poor students and a students' home The University Library contained 236 630 volumes in 1896 Students libraries are attached to the faculties of Laws Arts and Medicine and there are excellent clinics belonging to the faculty of Medicine The University possesses anthropological zoological and other museums Eleven learned societies owe their origin to the University The number of students in 1913 was 9 390 and there was a staff of 595

The University of Dorpat This was founded in 1802 though its origin may be traced back to 1632 when Dorpat was captured by Sweden When the town was recovered by Peter the Great in 1710 it was deprived of its celebrated school of learning It is the only university in Russia that has a faculty of Theology In 1808 students societies were formed In 1820 a new statute restricted the privileges of the students Dorpat was then an important centre of learning and supplied professors to the other Russian universities In 1850 the election of the rector from among the professors was abolished and he was appointed by the Minister of Public Instruction In 1852 the police received secret instructions to watch the students societies Not till the reign of Alexander III did the Russification of Dorpat University begin The chairs held by German professors were taken by Russians and the curriculum was made to correspond with that of the other Russian universities The name Dorpat was changed into Yuriev in 1893 The number of students greatly increased when admission was extended to pupils of ecclesiastical seminaries In 1902 Dorpat or Yuriev University celebrated its centenary In 1913 the number of students was 2 011 with a teaching staff of 152

The University of Kazan This was founded in 1804 to form a link between the eastern border and the population of Central Russia The study of Oriental languages was encouraged Fifty scholarships were founded at the University to prepare schoolmasters and doctors for the provinces of Siberia The early period of quiet fruitful activity did not last long In 1819 the notorious reactionary Magnitsky was appointed principal of the University He dismissed eleven professors and introduced a scheme based on the literal interpretation of the Scriptures Everything apparently opposed to Bible teaching was proclaimed to be false The result was that in 1822 the University had only

ninety one students But after Magnitsky was dismissed in 1827 a period of healthy activity began and during 1827–46 the chairs hitherto unoccupied were filled the library was brought to a high standard of excellence the number of students increased and many well known scholars graduated The local Press owes its origin to the University which has also published a *Medical Review* since 1904 Many learned societies have been founded in the University such as the Society of Archaeology the Society of History and Ethnography and the Societies of Law, of Mathematics and of Natural Science

In 1913 the number of students was 2 012 with a teaching staff of 296

Warsaw The University of Warsaw was opened in 1817 with five faculties Theology Law Medicine Arts and Science The language used at the University was Polish and the teaching was thoroughly national This continued until the insurrection of 1830 after which by order of Nicholas I the University was closed In 1862 in the liberal reign of Alexander II a high school with four faculties was founded at Warsaw Its diplomas were equal to the degrees of any of the Russian universities In 1867 Warsaw Educational District came under the control of the Ministry of Public Instruction and the high school was superseded by a university in 1869 The use of the Russian language was made obligatory The number of students at the opening was 1 036 and the staff consisted of fifty three Seminarists were admitted as students in 1886 Since 1888 the Government has made an annual grant of 270 670 roubles (£26 570) for maintenance The University also enjoys a small revenue which it expends in bursaries The students fees amount to 16 000 roubles (about £1 700) per annum The valuable library of the high school was handed over to the University which also possesses an excellent botanical garden astronomical and meteorological observatories and museums of zoology and archaeology besides laboratories and clinics There are several learned societies including a Natural History Society in connection with the University

In 1913 the number of students was 2 415 with a staff of 133

The University of Kharkov This was founded in 1805 For the first ten years out of twenty nine professors only seven were Slavs Of the four faculties that of Medicine was in abeyance for some time The first newspaper was founded in Kharkov at the initiative of the University Under the statute of 1804 the universities had the right of supervision of both primary and secondary education Kharkov University devoted much attention to the schools Only nine primary schools had existed in the Kharkov Educational District in 1805 but by 1813 their number had increased to 163 The professors found the teachers and wrote the text-books The first learned society at the University was founded in 1812 consisting of two sections—Natural History and Literature Between 1815 and 1836 signs of decline became apparent in the University and the number of professors fell from twenty-eight to eight Students were placed under strict subordination and this led to the usual troubles In spite of this however their interest in science and literature grew In 1835 the supervision of schools was taken away from the universities In 1837 the yearly grant to the University was increased from about 43 000 roubles (about £4 500) to 105 714 roubles (about £11 150) In 1863 it was still further increased to 338,829 roubles (about £35 750) and greater scientific activity followed Many learned societies such as the Historico-philological the Mathematical and the Society of Natural Science were founded At the present time the University Library contains more than 150 000 volumes Scientific collections and museums flourish Not a few eminent scholars have finished their education at the University of Kharkov

In 1913 the number of students was 3 002, the staff numbered 270

Odessa The University of Odessa was opened in 1865 with three faculties—Arts Science and Law the number of students being 175 The faculty of Medicine was opened in 1896 In 1896 the number of students had increased to 581 and the annual Government grant was 275 800 roubles (about £29 100) In addition a yearly sum of 53 000 roubles (about £5 600) was allocated to the University by the municipality of Odessa Two thousand four hundred students graduated during the period 1865–96 The University Library contains upwards of 170 000 volumes and the Students Library 15 000 Among the University institutions are the Astronomical Observatory the Botanical and Zoological Museums the Law Society and the Historico philological Society In 1913 the number of students was 2 025 the staff numbered 211

The University of Tomsk This was opened in 1888 with the faculty of Medicine only and seventy two students During the following ten years, the number of students increased to 446 with a staff of about forty The great majority of the students were former seminarists who were admitted only to the Universities of Tomsk Warsaw and Dorpat The faculty of Law was opened in 1899 The University Library has some 100 000 volumes Mineralogical and zoological institutes a botanical garden, and museums of archaeology and ethnography are attached to the University Connected with it also are the Medical Society and the Natural Science Society There is a students hostel belonging to the University The project of the Duma to open a faculty of Arts in 1913 was vetoed by the Minister of Public Instruction Since 1912 women have been allowed to enter the University as students of Medicine

The number of students in 1913 was 892 most belonging to the faculty of Medicine The staff numbered 110

The University of Kiev This was founded in 1834 At first the faculties of Arts and Law were alone available the faculty of Arts preceding Law by twelve months The period 1840–63 was unfavourable to the development of university life and at Kiev many chairs remained vacant and the number of students decreased But after 1863 an era of progress began A number of learned societies were formed many laboratories and museums founded, and libraries enlarged The faculties containing most students are those of Medicine and Law The University Library comprises over 500 000 volumes There are two observatories, a collection of historical documents and a Law Society Two societies to assist students of insufficient means distribute annually sums amounting to over 20,000 roubles (about £2 100)

In 1913 the number of students was 4 857, and the staff numbered 248

The University of Saratov This was founded in 1909 with one faculty only viz Medicine The

buildings are not yet complete The petition of the Zemstvo of Saratov, in 1913 to establish the faculty of Arts was not successful, the Minister of Public Instruction did not find himself able to provide the necessary staff In 1912 five elected professors were superseded by five appointed by the Minister The number of students in 1913 was 412 the staff numbered sixty two members

The grants from the Government Treasury to all ten universities, in 1913 reached the sum of 5 967 000 roubles (£629 850) From other sources such as the zemstvos municipalities etc there came 4 085 000 roubles (about £431 200) F S

RYLANDS LIBRARY, THE JOHN —The John Rylands Library Manchester was formally dedicated to the use of the public on 6th October 1899 It owes its existence to the munificence of the late Mrs Rylands, by whom it was erected, equipped and liberally endowed as a memorial to her late husband the successful Manchester merchant whose name it perpetuates

Nine years were spent in the erection of the building which is one of the finest examples of Modern Gothic architecture in Europe Stone mason, sculptor, metal worker and wood-carver conspired under the guidance of the architect Mr Basil Champneys to construct a building worthy of the collection of treasures which it houses

The contents of the library now number upwards of a quarter of a million volumes and include several notable collections foremost among them being the 'Althorp Library and the Crawford MSS The distinguishing feature of the former is its collection of early printed books which is probably without rival The Crawford MSS number about 6 000 and illustrate the history of writing and illumination in the principal languages and characters of the East as well as the West

Incunabula The collection of books printed before 1500 numbers more than 3 000 volumes It contains the St Christopher print dated 1423 a number of other block prints fourteen block books including the *Apocalypsis S Joannis* the *Ars Moriendi* the *Biblia Pauperum* the *Speculum Humanae Salvationis* the *Ars Memorandi* and specimens of nearly every printer of this early period A number have the distinction of being the only copies of their particular editions now extant

Of the work of England s first printer Caxton the library possesses sixty examples including three which are unique whilst of others only one other copy is known notably Malory s *Morte d Arthur* and Caxton s *Advertisement*

Of books printed at the famous Venetian press founded in or about 1494 by the scholar printer Aldus the collection is considered to be the largest and most complete ever brought together numbering upwards of 900 volumes

Classics The classical side of the library is pre-eminently rich with its series of *editiones principes et primariae* of the Greek and Latin writers most of which still retain the freshness they possessed when they left the printer s hands

Of the great masters of Italian literature there is a considerable collection The Dante selection alone numbers more than 6 000 volumes and is specially rich in early editions of the *Divina Commedia* The only known copy of the *editio princeps* of the *Decamerone* printed by Valdarfer at Venice in 1471 is perhaps the gem of the collection

English Books and Bibles The department of English literature comprises not only a very large collection of the original editions of Chaucer Shakespeare Spenser Milton and Bunyan—to mention only a few of the most famous names—but many copies of outstanding importance by reason of their personal history The collection of MS and printed copies of the Bible ranges from the sixth century to the present day and is amongst the finest extant

MSS Another of the outstanding features of the library is the collection of Oriental and Western MSS numbering at the present time upwards of 10 000 items and illustrating in a remarkable manner most of the more important materials and methods which have been employed from the earliest times for the purpose of recording preserving and transmitting to posterity the knowledge of past achievements The nucleus of the collection was formed by the MSS contained in the Althorp Library which has been added to from time to time by other purchases including the MSS of the Earl of Crawford Indeed every effort is made to build up the collection so as to cover the history of writing and illumination in the principal languages and scripts and at the same time to offer to students of the many departments of literary and historical research original sources which may be of real service to them in the prosecution of their studies

The library has so many sides and contains such a wealth of rare and precious volumes that in this short article only the fringe of a few of the more important collections can be touched upon whilst many sections must be passed over entirely

Modern Works It was inevitable that the possession of so great an inheritance of literary treasures should cause the library to become a place of pilgrimage for those who have given themselves to the service of learning as well as for the lover of rare books But from the first it has been the intention of the Governors to make it at the same time an excellent working library for students whether in the departments of theology philosophy history philology *belles lettres* the fine arts bibliography or palaeography and with this end in view they have consistently strengthened the collections in directions likely to be fruitful of good results so that students and scholars of riper experience alike should be attracted not merely by the library s treasures but also by the facilities which it offers for study and research

Publications of the Library With the object of making known the resources of the library a number of elaborate descriptive and bibliographical catalogues facsimiles translations and other publications have been issued by the Governors from time to time including a quarterly bulletin which in addition to notes about the library and lists of the latest additions to its shelves publishes articles of permanent literary and historical value by recognized scholars Particulars of these publications may be obtained upon application to the librarian H G

RYLAND'S SCHOOL. — (See NONCONFORMIST EDUCATION OF THE MIDDLE AND WORKING CLASSES)

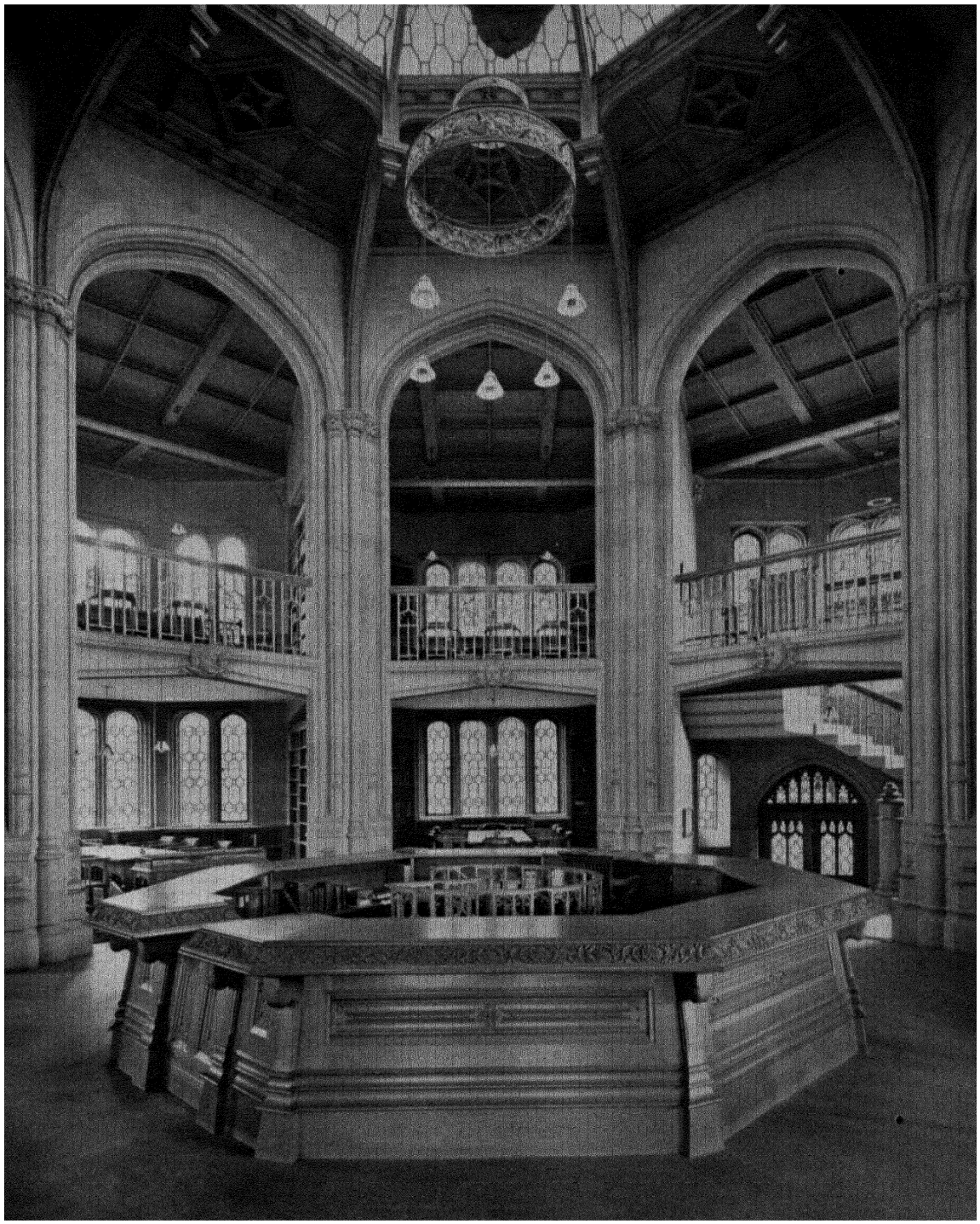

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PLATE LXXXI

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SACRED MISSION, THE SOCIETY OF THE.—(See CLERGY, TRAINING OF THE)

SADOLETO, JACOPO (1477–1547) [of Modena] —He was papal secretary (1513) bishop of Carpentras (1517) cardinal (1536) As bishop he won the devoted affection of his diocese and as statesman and administrator he was frequently consulted by Popes Leo X Clement VII and Paul III Distinguished as a scholar and student of philosophy he was the friend of most of the leading humanists of his time including Pietro Bembo and Erasmus with whom he was on terms of close intimacy He sought to reform the Church from within and reconcile the old faith with the new learning Largely at his own cost he secured for the schools of his diocese especially for Carpentras the best available masters Himself a student of the theory and methods of education Sadoleto composed a treatise *De Liberis Recte Instituendis* first published at Venice (1533) The work is cast in the form of a dialogue between the author and his nephew Paolo Sadoleto afterwards bishop of Carpentras The thought throughout is influenced by the writer s study of Plato the style though adhering closely to Ciceronian usage maintains a vitality of its own The ideal pupil is assumed to spring from a good stock and to be nurtured in good surroundings excess of wealth being more harmful to character than lack of it Stress is laid on the public duty of securing pre natal care and early training for children The child should if possible be fed by the mother but it is of primary importance to choose a good nurse who can sing beautifully to the child and preserve it from hearing evil words or seeing ugly gestures We learn by sight earlier than by hearing hence the importance of early models for imitation in deportment of mind and body alike The natural impulses of body and mind should also be brought under the sway of law by the practice of manly exercises including dancing but chiefly by the study and appreciation of rhythm in poetry and music The boy must be trained in the grace of thankfulness to God and must above all see his parents in the habitual practice of worship

The Training of the Mind If the father cannot himself train his son s mind he must appoint as tutor a man of real distinction and liberal culture A boy should be trained by men after the age of 5 years when virtue first becomes *intelligible* Harshness shown to children is sacrilege fear is a weak guardian of virtue, a right love of approbation is to be encouraged Natural endowments must be perfected by both moral and literary training, since the province of Truth includes both knowledge and conduct Trust and obedience—the virtues of childhood as yet incapable of reason—lead to that virtue which springs from conscious obedience to an inner authority The boy must learn to speak fluently and correctly before he learns to read, and the art of reading aloud must be constantly practised Paraphrase is a useful aid to verbal expression pregnant maxims of high authority should be learnt by heart Elaborate grammatical discussions are unsuitable for a boy but the elements of grammar must be studied in Latin and Greek (*e g* sounds, parts of speech, declensions and conjugations) Grammar's is best taught by practical application of rules so as to ensure skill in developing and arranging spoken or written utterance for which purpose Sadoleto urges the study of Cicero by whom 'everything has been said in a supreme and final form' Authors recommended for study are Demosthenes, Aeschines, Lysias Isocrates historians both Latin and Greek, Plato Aristotle (in Greek not in a Latin version) Homer Virgil Terence Plautus Arithmetic must be learned both for practical use and as a generous art whereby the mind is set upon the contemplation of eternal truth The science of geometry is needed for the understanding of astronomy architecture, geography navigation and of "everything which comes home to the use of life by its convenience or its necessity' The ideal pupil does not spend his whole time upon a single art but pursues each several art only far enough for the main purpose to wit the quest of Philosophy (that one great body whereof all other arts are but members), 'the art of living well which teaches us not only how to think but how to act and do" K F

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SAFFRON WALDEN SCHOOL.—(See FRIENDS' SCHOOLS)

SAFFRON WALDEN TRAINING COLLEGE (for Women Teachers) —This was opened under the auspices of the British and Foreign School Society in 1884 with Miss Steele as principal The greater part of the cost of erection was provided by the generosity of Mr George Stacey Gibson The College is situated in a commanding position overlooking the town on a site of over 8 acres and is built in Queen Anne style in three storeys with wings Miss Steele was succeeded as Principal by Miss Dunlop in 1891 In 1901 a school for girls and infants accommodating 448 children was opened as a practising school for the students The College accommodates sixty-three resident students who are prepared for the Board of Education s Final Examination

SAILOR, HOW TO BECOME A.—(See ROYAL NAVY THE TRAINING OF BOYS TO ENTER THE)

ST ANDREWS, THE UNIVERSITY OF—The little University of St Andrews is the oldest in Scotland Founded in 1410 it received a charter in 1411 from Bishop Henry Wardlaw who obtained the approval of Pope Benedict XIII in the following year St Andrews is situated on a sandstone plateau about 50 ft above sea level on St Andrews Bay an inlet in the coast of the county of Fife The climate is bleak but bracing and the city is the resort of many holiday makers and golfers the links are world famous and the seat of the Royal and Ancient Club the headquarters of Scottish golf The University consists of three colleges St Salvator s founded by Bishop James Kennedy in 1456 which began to confer degrees in theology and philosophy in 1463 St Leonards founded in 1512 by John Hepburn prior of the monastery and Alexander Stuart bishop of the diocese of St Andrews a natural son of King James IV and St Mary s originally established by the Beatons and made a college of the University by a Bull of Pope Paul III in 1537 In 1430, Bishop Wardlaw had made over to the use of the teachers a house called the Paedagogium

The University was modelled on that of Paris (*q v*) Though mediaeval orthodox theology was the essential feature of the early teaching the college soon became a centre of the principles of the Reformation and a nursery for militant Scottish Protestantism In 1579 the constitution was rearranged and St Mary s was henceforth devoted to divinity and St Salvator s and St Leonard s were combined into the United College in 1747 The old buildings of the latter are now used as a girls school—appropriately enough since St Andrews was the pioneer among universities in the movement towards the higher education of women it awarded the degree or diploma of L L A corresponding to M A before the year 1892 when women were first admitted to the University on the same footing as men a women s hostel being opened in 1896 The site of St Salvator s is occupied by the United College but the buildings are modern Tudor and were erected between 1827 and 1847 The fine old Gothic chapel which contains the tomb of Bishop Kennedy and a pulpit called John Knox s is now used as the University chapel and as the parish church of St Leonards The original chapel of St Leonards College is a ruin

In 1899 fine new medical buildings were opened the gift of the third Marquess of Bute University College Dundee, was affiliated to the University in 1890 the House of Lords annulled this connection in 1895 but two years later the affiliation was restored

The library was begun by James VI and I in 1610 and about the middle of the eighteenth century the libraries of the three colleges were combined with it It was rebuilt in 1764 and improved in 1829 and again in 1889 It contains upwards of 120 000 volumes and 200 MSS There is also an excellent museum

The number of students is about 200 they hold among them about 120 scholarships and bursaries ranging in annual value from £5 to £50 The class and degree fees are moderate There are six faculties arts, science, divinity law medicine and music (See ACADEMIC COSTUME)

Among distinguished Principals have been Dr John Tulloch (1823–86) and Dr James Donaldson under the latter of whom great improvements and developments in the adaptation of the University to modern requirements were set on foot

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ST BEES COLLEGE—(See CLERGY THE TRAINING OF)

ST COLUMBA—Columba s fame rests mainly on his evangelization of Caledonia (A D 563–597) but he also rendered valuable educational service Trained in monastic schools at Moville (Down) and Clonard (Meath) he founded many Irish monasteries (Derry Durrow Kells etc) uniting educational with monastic aims This twofold object was conspicuous in Iona and presumably in Columba s other Caledonian monasteries The original alumni (juniores) of Iona were mostly youths being trained for monastic service Adamnan (III 22) mentions a pupil destined for non monastic life and soon after Columba s death Oswald afterwards king of Northumbria and several brothers became alumni This educational function gradually extended and for centuries education of the young was in the hands of Scottish monks

To the Columban Church the Northern Picts owed a written language (Skene *C S* II 458) Columba s Juniores learned Latin and transcribed Latin Scriptures He composed hymns for worship and the Old Irish Life (ninth cent) tells of his thrice fifty lays Latin and Gaelic

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ST DAVID'S DAY, CELEBRATION OF—The festival of St David the patron saint of Wales is celebrated on the 1st of March by all loyal Welshmen It should therefore be given special importance in the calendar of a Welsh school where it may become an occasion full of enjoyment and inspiration The proceedings of the day should serve to develop in the scholars the love of their motherland by reminding them of its unique beauties and the great traditions handed down by their ancestors A head teacher is at liberty (subject to the approval of H M I) to vary the time-table for the day and a few suggestions are given as to what may be done It would clearly be impossible to teach everything in one day but in the course of a year s work many of the points will have been met and dealt with and the children will only need to be reminded of them to reproduce gladly in a new connection what they have already learned

Suggested Scheme. The life of St David may be reviewed He passed the whole of it in Dyfed, while the British were still struggling fiercely with the English for possession of the country He was Bishop of Menevia (Moni Judeorum) now called St Davids It is appropriate also to relate the life-stories of other great Welshmen especially those with whom the year is particularly associated The year 1915, for instance, was the 500th anniversary of the death of the great national hero, Owen Glyndwr and the centenary of the glorious end of Sir Thomas Picton at Waterloo In any year there

will be no lack of subjects for biography among Welshmen famous in war, in the arts or in public life The children may be led to investigate the sources of their national pride What have the Welsh to be proud of ? A fine country, with grand rocky scenery as well as beautiful green valleys is theirs and an ancient language which it is the duty of all Welsh children to study and preserve just because it is their own and because it enshrines poetry fit to compare with that in any language Some of the tales of long ago full of mystery and fascination belong to the Welsh King Arthur whose character and achievements have suggested stories pictures and statues in many lands is a Welsh hero The music of Wales has long been famous and the descendants of the bards are great singers and lovers of music to day This talent of the people is fostered by the National Eisteddfod about which the children should know Among the Welsh tunes special attention should be drawn to the National Anthem (*Hen Wlad fy Nhadaw*) and its history The words were written about sixty years ago by a Pontypridd weaver named Evan James (*Ieuan ap Iago*) and the music by his son It is said to have been first publicly sung in a Methodist chapel at Maesteg and was sent in 1858 to the Eisteddfod at Llangollen Since then it has come to be accepted as the Welsh National Anthem ' The March of the Men of Harlech is another of the many songs which every Welshman is proud to sing on St David s Day because it expresses his spirit and was written by one of his compatriots Older scholars may be told of the marvellous Celtic illuminated manuscripts reproductions of which may be seen in the libraries of the larger towns in Wales and they should be encouraged to read books on Wales and the Welsh both in the public libraries and those of the schools Finally no opportunity should be lost of impressing upon the children their duties and privileges as members of one of those small nations which, in the words of Mr Lloyd George ' God has sometimes chosen as vessels by which He carries the richest wine to the lips of humanity to rejoice their hearts to exalt their vision and to stimulate and strengthen their faith

ST JOHN AMBULANCE ASSOCIATION, WORK OF —(See FIRST AID)

ST. MARK'S TRAINING COLLEGE (Chelsea) — This was one of the earliest institutions of the kind founded by the National Society and owes its origin to the efforts of Gilbert Farquhar Mathison who was influential in raising a fund to provide training schools The site which was secured in 1842 for this College was the mansion and grounds of Stanley Grove lying between the King s Road and Fulham Road in what was then a rural neighbourhood about three miles west of Hyde Park Corner

The first Principal was the Rev Derwent Coleridge who had been head master of Helston Grammar School in Cornwall and who had numbered Charles Kingsley among his pupils The work of Mr Coleridge was devoted especially to raising the ' social status " of the schoolmaster, and he carried it out in the face of the opponents who considered that the over-education of young teachers would unfit them for the work required in elementary schools His view was that the positions must be made better for the men, and that the men must be made fit for better positions

At first the course was for three years, an entrance fee was charged and an annual fee of £25 was paid by the students, or by patrons who sent them to the College A uniform was prescribed, provided by the College but paid for by the students Besides the educational training, there was much attention given to industrial work, as in the neighbouring college at Battersea (*q v*)

The College Chapel was opened in 1845, and soon became famous for its choir, trained by the Rev Thomas Helmore, and afterwards by Dr Hullah (*q v*)

In 1847 the Government began to issue certificates to the trained students and in 1851 to provide maintenance grants but the Codes of 1860 and 1862 hampered the work of this and other colleges by their tendency to lower the status of teachers and to depreciate higher training Mr Coleridge retired in 1865 and at the same time the College lost its vice principal (the Rev Thomas Williams) and its secretary (Mr A C King) The new vice principal was the Rev C F Eastburn, who had already been a tutor in the College and Canon Cromwell who had been Principal of Durham Training College succeeded Mr Coleridge

Canon Cromwell s work was to raise St Mark's from the slough of despond created by Codes which were based on the assumption that teachers were being over educated He was admirably fitted for the task and ever since his work at Chelsea began, St Mark s has been prominent among training colleges in good work A practising school for 600 children was erected, and in 1870 Canon Cromwell took up the cause of the schoolmaster and of London education as a member of the first School Board for London Canon Cromwell had a most able assistant in Mr Owen Breden, for many years vice-principal under whom the musical work of Dr Hullah was continued Canon Cromwell retired in 1887 and was succeeded by the Rev G W Gent who developed university work in St Mark's Many additions to the buildings and equipment were made during Mr Gent s short period of office He was succeeded in 1897 by the Rev R Hudson

ST PAUL'S SCHOOL —In 604, King Ethelbert of Kent built on the summit of Ludgate Hill " the church of St Paul the Apostle in which Mellitus and his successors might have their episcopal see ", and probably a school was founded at the same time as part of the cathedral But London relapsed into paganism and does not emerge again into the light of history until 886 when Alfred, having over come the Danes restored Christianity From that time the school almost certainly existed without a break It is mentioned in a writ of Bishop Henry of Blois Stephen s brother about 1138 and also by Fitzstephen, the biographer of Becket, about the year 1178 as one of the three privileged schools of the city the other two being attached to St Martin's-le Grand and to Bow Church Indeed, Fitzstephen gives a graphic account of school life at St Paul's The boys learned grammar and read Latin authors, made verses and studied rhetoric and logic on holidays they indulged in cock fighting at school and played football on Smithfield In the long summer evenings they rambled in the country round the city, especially visiting Clerkenwell, where they might always find good company and amusement The school was slenderly endowed and the master very poorly remunerated till the end of the twelfth century when a handsome estate was

appropriated to their maintenance, but, four or five years later, in obedience to orders from Rome, the mastership of the cathedral school was converted into the chancellorship of the cathedral, the functions of the new office being limited to the teaching of theology The chancellor appointed a deputy to conduct the school and diverted the endowment to his seminary The school had to depend on the fees paid by city pupils and, as for many years there were no rivals to the three privileged institutions no doubt it was sufficiently profitable The fifteenth century, however broke the monopoly and new schools were set up at St Dunstan s in the East and at St Anthony's in Threadneedle Street The latter founded in 1441 became a great school—greater by far than the contemporary St Paul s—and produced many famous men it came to an end in the Great Fire of 1666

In 1509 John Colet D D Dean of St Paul s built a new schoolhouse for 153 scholars (the number of the Miraculous Draught of Fishes) close by the old cathedral grammar school and in the following year appointed with the consent of the Chapter, William Lily as first master of the reconstituted school Early in 1511 having obtained the papal sanction he induced the Chapter to waive their rights and transfer the school to the Mercers Company of which he was a member as governors and trustees and he endowed it with the whole of his patrimony amounting to 80 marks per annum Under its new rulers the school prospered exceedingly till the eighteenth century when a process of decay began which almost extinguished it In 1865 the Endowed Schools Commission restored it it was removed to new buildings in West Kensington in 1886 and it is now directed under a scheme of the Charity Commissioners issued in 1900 It is *facile princeps* among the great day schools of the country and its annual harvest of scholarships and exhibitions at the universities and medical schools is amazing There are about 700 boys in the school of whom 153 are foundation (or free) scholars and about 80 are boarders The curriculum though normally classical and literary includes large mathematical science engineering and modern (language) sides The school equipment is excellent nor are the amenities of public school life on the physical and recreational sides neglected there are a gymnasium a swimming bath an armoury with a three fold miniature rifle range workshops and fives courts Cricket and Rugby football are the principal school games

SALAMANCA, THE UNIVERSITY OF—This was founded by Alfonso IX at the beginning of the thirteenth century as the royal university of the kingdom of Leon on the model of the *studium generale* of Palencia the university of the kingdom of Castile which had been created very shortly before But when both kingdoms were definitely reunited and the latter university was absorbed Salamanca remained the only university under the crown of Ferdinand III and may therefore be regarded as the most ancient in Spain

The first decisive impulse given to its organization was due to Alfonso X (the Wise) who systematized its studies in conformity with the conception of a university expounded in the *Partidas* (*Partida* 2 Titulo xxxi) by founding the following Chairs two chairs each of Logic Physics Latin Laws and Decretals one of Canon Law and one of Music The professors a librarian an administrator and two conservators constituted, with the students, the whole of the *studium*

Although the university was a royal foundation, it was the Popes who from Alexander IV onward, contributed most to its life and progress The Council of Vienne deemed it, in 1311, to be one of the chief universities of the world and placed it on a level with Paris Oxford and Bologna The Spanish anti-pope, Benedict XIII (Pedro de Luna), exercised the most decisive influence on its development From 1380 onwards he constantly intervened in its favour he ensured its economic stability and in 1416 granted statutes by which its teaching acquired new breadth and direction the most famous reform having been the establishment of a Chair of Theology By this innovation the chairs were increased to twenty five six of the Canon Law four of Jurisprudence three of Theology, two of Medicine two of Natural and Moral Philosophy two of Logic one of Astronomy one of Music two of Hebrew, Chaldean and Arabic and two of Latin In 1432 Martin V confirmed these foundations with new statutes whereby its vigour was maintained until the eighteenth century

The Fifteenth, Sixteenth, and Seventeenth Centuries At the end of the fifteenth and the beginning of the sixteenth centuries the University reached its apogee In 1480 other chairs of minor importance were created in all the faculties and two of the Institutes and two of the Arts were added Shortly afterwards two others in Theology—readerships in the scholastic philosophies of St Thomas Aquinas and Duns Scotus—others in the Canon Law two in the Codices one in Aristotelian Physics and in 1508 Nominalist Theology and Philosophy were introduced in imitation of Paris whence professors were brought to fill the chairs A Chair of the Old Digest and a Chair of Greek were officially founded the latter subject up to that time, had been taught irregularly by the Professor of Rhetoric Arias Barbosa Furthermore during the fifteenth and sixteenth centuries twenty five colleges were founded around the University

This was the period when the University reached its maximum development which was traditionally maintained up to the eighteenth century Its vitality in the sixteenth century is proved by the statutes of 1538 drawn up by the University Council itself and by those of 1561 in accord with the Royal Council and the *Visitor* Don Diego de Covarrubias These were published together with the Constitutions of Martin V in 1584 and are reprinted in the work of Señor Esperabé (*Historia de la Universidad de Salamanca* [Salamanca 1914]) The importance of the University in the history of Spanish culture continued even after the foundation of the University of Alcalá (*q v*) The names of Nebrija Francisco Sánchez de las Brozas Victoria Cano Soto Suárez and Luis de León prove the quality of its professors and the minimum and maximum numbers of matriculations in the sixteenth century—5 150 in the year 15 6 and 6 778 in 1584—demonstrate how keen was the passion for learning among its students As regards European civilization it was one of the chief intellectual centres which upheld the Counter Reformation as is clearly proved by the presence of professors and old students of the University at the Council of Trent The general characteristics of Spanish culture were reflected in the University where the brilliant schools of theology and civil and canon law outshone those of mathematics

medicine, and experimental science The history of Spain and of the University follow an identical course After the rapid and substantial development in the times of the Catholic kings and of Carlos V, an inward decay is manifest beneath the apparent grandeur of the reign of Philip II which ended in the great decadence of the seventeenth century, and endured until in the eighteenth century the difficult rebirth of national life began

History in Modern Times In the reign of Philip V the reform of the universities began at the instance of the Ministry of Mercy and Justice but this effort at reform like so many others which emanate from a central government gave no practical result owing to the refractory attitude of the University Council More was done by certain members of the Council who were imbued with the modern and reforming spirit, such as Don Diego de Torres in respect of mathematical teaching and a numerous group of professors in the time of Carlos III in respect of experimental science From internal dissensions in the Council the Plan of Studies arose in 1772 Discussions and new plans succeeded one another without effect during the turbulent years at the end of the eighteenth and the beginning of the nineteenth centuries which reflected the influence of the French Revolution and the War of Independence This stormy period followed by the reaction under Ferdinand VII retarded the work of university reconstruction which was in process of realization during the course of the eighteenth century The triumph of political liberty brought about the liquidation of the past and the death of traditional institutions The universities were reorganized in 1845 according to the centralizing ideas derived from France The Faculty of Theology was suppressed, economic autonomy was lost the colleges were abolished and the University of Salamanca lost its historic personality It was converted into a department of the State modelled on the same pattern and neither better nor worse than any other of the State universities F DE O

SALERNO, MEDIAEVAL SCHOOL OF —For two centuries this School of Medicine was famous throughout Europe The School is known to have existed in the twelfth century but physicians of Salerno had been notable as early as the ninth century A revival of medical studies in the eleventh century appears to have led to the establishment of this purely Medical School and Adelard of Bath suggests that the medical studies were promoted by contact with the Greek medical writers Adelard attended Greek lectures at Salerno and mentions the cause of magnetic attraction as one of the subjects Constantius Africanus (1080) appears to have introduced into Salerno the aphorisms of Hippocrates Robert Duke of Normandy visited the School to be cured of a wound after the Crusade of 1090 and was there when his brother William died In 1231 Frederick king of Sicily officially recognized the School and granted it the monopoly of examination for medical licences The School declined in the fourteenth century as a result of the increasing popularity of Arabic medicine

SALOMON, OTTO —He was born at Gothenburg, in Sweden in 1849 and had scarcely begun his special training as a civil engineer before he was called away by his uncle August Abrahamson, a wealthy and philanthropic merchant in the same city, to help in the management of Naas, a large estate which he had acquired in 1868 near Floda Station, about 20 miles north-east of Gothenburg It is curious that a man who owed so little to scholastic training should become one of the most enthusiastic and successful trainers of teachers of his time In founding a school for such children on the estate as had left ordinary school but not yet begun work, he and his uncle who were always animated by the same aims sought to remedy the decay of cottage industries by the introduction of manual work, which was done with such success as to overcome the opposition of parents and inspectors The work of these earlier years was of a utilitarian semi-technical character compared with that which came after But a three weeks visit which Salomon paid in 1877 to Uno Cygnaeus (*q v*) in Finland and the lively correspondence that followed were of the utmost service to him in making clear the value of educational handwork (Sloyd) as a means of general education The affectionate regard in which Salomon held Cygnaeus may be seen from the memorial notice he wrote at the latter's death in January, 1888 It fills a whole number of the *Undervisnings-blad from Naas* in the following month of which there is a copy in the British Museum

Salomon had already in 1874 added the training of Sloyd teachers to his school work His first plan was to take intelligent artisans and in a twelve months course to give them training in the kinds of handwork suitable for children and also some further knowledge of mathematics and the mother-tongue But, as he became convinced that Sloyd should form an essential part of an ordinary school course he sought to make the ordinary teacher his agent He began his experiments in this direction in 1878 taking ordinary teachers in five-week courses, and was so satisfied with his success that, in 1882 he dropped his earlier method of training entirely This work of imparting to the ordinary teacher a knowledge of Sloyd and impressing upon him its high importance for the school soon became his sole work Teachers came at first from the neighbourhood and afterwards from every part of Sweden and before long from abroad Women also came from 1882 onwards The first English teacher came in 1884 and before the end of the eighties, the institution had assumed an international character Of the 6 441 students at Naäs from 1875 to 1914, two-thirds came from Sweden and one third from thirty seven countries in every part of the globe

Principles Underlying His Work The courses at Naas differed from those elsewhere by the careful zealous attention given to underlying educational principles Every two hours of bench work was followed by an hour of lecture or discussion The lecturing was not formal but admitted of much interchange of thoughts and ideas Whatever the mother tongue of the student some means were found of making him a full partaker in all that went on Thus quite a large proportion of the students took back with them seed-thoughts that gave manual work in schools all the world over, a much more educational character than could otherwise have been possible In the last six or eight years of his life Salomon, ever intent on giving bodily activities as opposed to the printed page a larger place in the school curriculum, added other courses to those in wood-sloyd (*e g* in organized games cookery needlework, and gardening) Abrahamson, at his death in 1898, left the

estate at Nääs, with a capital sum of £21,000, to the State, for the continuance of the work in perpetuity, giving to Salomon the right of appointing his own successor But this was no easy task, and when Salomon died in 1907 without making any appointment, it was still less easy for the Board of Managers and it was only after several tentative appointments that Dr Rurik Holm of Gothenburg, was finally chosen J S T

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SALONS —(See "BLUE STOCKINGS AND EDUCATION, THE)

SALTARIAN.—(See BOOKS, SCHOOL)

SALTLEY TRAINING COLLEGE —About 1847 an Education Committee was formed in the Diocese of Worcester to promote the cause of elementary education in the diocese and at once decided to establish a training college for schoolmasters The College was erected at Saltley an eastern suburb of Birmingham and opened under Canon Gover in 1852 The first president of the Committee of Management was Lord Lyttelton who died in 1876 and was succeeded by the venerable Lord Norton In 1867 the dioceses of Lichfield and Hereford joined with that of Worcester in the support and management of the College Accommodation was at first provided for sixty and the College opened with two students but in 1873 there were 100 in residence Students were drawn largely from the Mid land counties and Saltley has supplied Birmingham with many hundreds of certificated masters

Canon Gover retired in 1871 and was succeeded by the Rev I W Burbidge under whom the College had a long career of prosperity Canon Gover is remembered as a pupil of Arnold of Rugby and for his introduction into Saltley of systems learnt under Arnold Under the Rev F W Burbidge many enlargements and improvements were carried out The college is now affiliated with the University of Birmingham so that certain students take their degrees at the end of three years and then undergo a year s professional training The College provides accommodation for 120 students The present Principal is Canon S Blofeld

In 1861 a Volunteer company was formed in connection with the Royal Warwickshire Regiment The College now possesses a contingent of the Officer s Training Corps

SANATORIA, SCHOOL.—The accommodation to be provided in a school is not easy to settle It may happen that it may be particularly free for a considerable time, and then completely upset by an attack of influenza Experience appears to show that the least accommodation to be provided is twenty beds to every 100 students In addition there will be required doctor's room matron s room and bedroom kitchen maids' bedrooms, and bedrooms for nurses at the rate of one nurse for every ten boys Nurses common room linen room and sewing room will also be required Sanitary annexes, with provision for bed pans etc must be arranged for If the wards are more or less closed in it seems desirable that small wards varying in size from one to eight beds should be provided and, even then glass or other divisions in the larger wards are desirable, as patients often have more than one infection Ordinary cases, such as mumps, German measles, etc , can be treated in these wards, but it seems desirable that a separate building with its own kitchen and other appurtenances should be provided for diphtheria typhoid smallpox etc Convalescent wards and dining-rooms will be required in any case

As the open air military hospitals at Leicester and elsewhere have not only proved such a success, but also proved so much more economical it is possible that school hospitals may be dealt with on similar lines G H W

SANCROFT, ARCHBISHOP —The policy of pure conformity in education imposed by Archbishop Sheldon (*q v*) could not be abandoned and we find that Archbishop Sancroft (1678–1691) had, in theory at any rate to maintain it and in 1678 he issued directions to the bishops of his diocese as to the testimonials required by a person seeking employment as a schoolmaster But in fact during his period the pressure of the Conformity Acts was relaxed and licenses to preach and to teach were freely issued to Nonconformists J E G DE M

SANITARY INSTITUTE, THE ROYAL —"The Royal Sanitary Institute of Great Britain ' was founded in 1876 to promote the advancement of sanitary science and to diffuse knowledge relating thereto In the same year the Parkes Museum was founded as a memorial to the late E A Parkes M D the first Professor of Military Hygiene at Netley In 1888 these two institutions working for the same object were incorporated under the title of "The Sanitary Institute the prefix "Royal being added in 1904 by the permission of King Edward VII

The Institute is a body of medical men engineers architects municipal officers and other workers interested in hygiene and represents all the various sciences allied to sanitation and public health It is now established at 90 Buckingham Palace Road London S W 1 and its work has been extended in the British Dominions branches being now at work in Australia South Africa Canada New Zealand India British West Indies and Hong Kong

Educational Work. The educational work of the Institute is carried on by means of the library the Parkes Museum sessional meetings congresses exhibitions the *Journal* of the Institute training courses and examinations for sanitary officers

The library contains standard books on sanitary science reports of medical officers of health and a reading room it affords opportunities for research and reference on all matters connected with public health The library is open daily (9 30 a m to 5 30 p m) except on Saturdays when it is closed at 1 p m and on Mondays when it remains open till 7 p m

The Parkes Museum contains the most approved apparatus and appliances relating to health and domestic comfort and serves as a means of practical demonstration and for teaching sanitary science

Sessional meetings are held about once a month at various centres for the reading of papers, for discussions on sanitary subjects and for visiting public sanitary works Congresses are held annually and in connection with them exhibitions of sanitary

appliances are arranged as a practical demonstration of the subjects discussed at the meetings

The *Journal* records the proceedings, and includes many items of interest to all who work in connection with sanitary science

Training courses of lectures for sanitary officers were started in 1886 They are now held in London twice a year for sanitary officers health visitors school nurses, and meat inspectors

Qualifications and Diplomas Examinations were originated in 1877 to meet a need created by the Public Health Act of 1875 for qualified men to carry out the duties of inspectors of nuisances Since 1900 the Institute's examining work has been extended beyond the United Kingdom and at present Boards of Examiners are established in all the chief parts of the British Empire

Members are elected by ballot of the Council and pay an annual subscription of two guineas or a life composition of twenty five guineas A Member must hold the Institute s certificate for sanitary science, a university degree a medical diploma or other qualifications Associates must hold a recognized certificate and pay an annual subscrip tion of fifteen shillings Eminent members of one year s standing are elected by the Council as Fellows of the Institute

SANITATION, SCHOOL —(See DISINFECTANTS IN SCHOOL BUILDINGS)

SANSCRIT, THE TEACHING OF —(See ORIENTAL EDUCATION IN GREAT BRITAIN)

SAVAGES, THE EDUCATION OF — (See PRIMITIVE EDUCATION)

SAVILE, SIR HENRY (1549–1622) —He was born near Halifax Yorkshire and educated at Merton College Oxford of which he was Warden (1585) He had travelled abroad and had been tutor in Greek to Queen Elizabeth In 1596 he became Provost of Eton at the same time occupying the wardenship of Merton He was one of the trans lators of the Bible being engaged on the books from St Matthew to the Acts of the Apostles (inclusive) and the Revelations He was probably the greatest classical scholar of his time in England and a great encourager of classical learning In 1591 he translated four books of the histories of Tacitus In 1595 he was made Latin Secretary In 1613 he com pleted his great edition of St Chrysostom in eight folio volumes at a cost of £8 000 He aided Bodley in his establishment of the Bodleian Library Though the greatest English Elizabethan classicist he is also well known as the founder of the Chairs in Geometry and in Astronomy in the University of Oxford and thus contributed greatly to the progress of mathematics in England The first occupant of the Savilian Chair in Geometry was Henry Briggs in 1619 He from 1596 had been Professor of Geometry in Gresham College London Savile as Provost of Eton was severe on clever boys who did not work hard, and praised the plodding students in preference F W

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SCHOOL SAVINGS BANKS.—Thrift is a wise use of available resources Wise spending is thrift A child is given threepence a week, and has complete control over it He probably spends it in sweets or small toys By and by he sees and wants a toy costing a shilling An unwise parent would probably supply either the toy or the money The wise parent points out how the child can himself accomplish his object He must spend say, a penny a week and save the remaining twopence, then, in six weeks, he will be able to satisfy his desire The time of waiting would no doubt be tedious but the parent could point out that had the saving been done beforehand the child s position would have been better In this way the child is training his self control

For this kind of thrift the establishment of school savings banks is desirable Many homes are unsuit able places for the care of money the bank, there fore should be held in school hours The teaching of thrift by occasional informal talks should be part of the school curriculum A child without pocket money is greatly to be pitied He is likely to become either a miser or a spendthrift for lack of training in judicious spending

The best system of school savings banks would be linked up with a municipal bank Failing this, local banks will usually be found willing to help The intelligent co operation of the teacher is essential—otherwise disaster is certain Each child will be provided free with a pass book and case The latter is most necessary but it need only be made of paper and this may be done in the hand-work lesson Various forms will also be required Easy withdrawal gives confidence but the parent should also know when his child is withdrawing cash Hence the withdrawal form should contain the parent s or guardian s signature—

I authorize *to withdraw the sum of*
from account No
Signed,

The same form should contain the receipt to be signed by the scholar Another form for transfer from school to school is a convenience if the schools under one authority adopt the same system

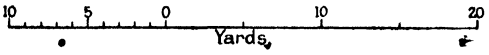
One notable result of the establishment of school banks has been the greater care taken of school apparatus and material When a child knows that a reading book costs eighteenpence and considers how long it takes him to save that amount his respect for the book is increased

It has been objected that school banks give training in selfishness and money grubbing—the child receives more on withdrawal than he pays in But experience shows that the small depositor even in the highest class gives no thought to the interest Some very successful banks worked by enthusiastic teachers give no interest at all But of course the child must not be exploited whether by bank Government or municipality H HIRST

SAXON SCHOOLS —(See ENGLISH SCHOOLS TO EDWARD VI, HISTORY OF)

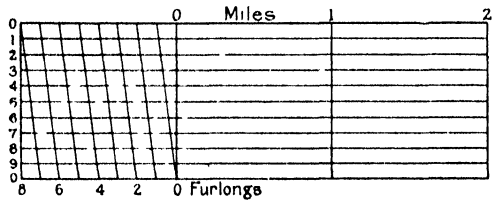
SCALES, THE DRAWING OF —Maps, and plans of land buildings and machines are drawn to scale An inch or a centimetre is taken to represent a fixed length, such as a yard or a metre, a mile or a kilometre according to the magnitude of the

area to be represented In Ordnance Survey maps, ten scales are used for ten series of maps ranging from 1 in = 500 in to 1 in = 15 782 miles For general use, these maps include scales of 1 2 and 4 in to the mile When a map or plan is to be drawn a representative fraction is chosen to indicate the ratio of a given line on the map or plan to the actual distance it represents If 1 in represents 10 yds the fraction is $\frac{1}{360}$ or 1 360, if 1 in represents $\frac{1}{2}$ mile it is $\frac{1}{31680}$ or 1 31680 With this fraction a suitable length of scale can be constructed for use in measuring distances on the map or plan For a ratio of 1 360 the following kind of scale is used—



For such a scale as 1 31680 it is usual to substitute the simple equivalent of ' two miles to the inch ' and all distances on the map measured in inches are changed to miles by doubling An architect s set of scales is specially prepared to show many simple ratios such as $\frac{1}{8}$ $\frac{1}{10}$ $\frac{1}{8}$ $\frac{1}{12}$ of an inch to a foot The above are *simple* scales

The Diagonal Scale For small fractions a *diagonal* scale is used In the example shown a mile is divided into furlongs and in the triangle at left or right tenths of a furlong are shown

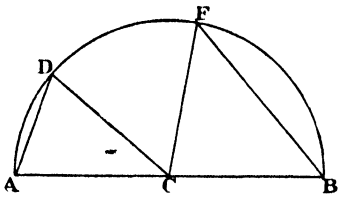


On any horizontal line the distance between consecutive diagonal lines is a furlong The tenths in the left hand triangle are numbered 1 to 9 On line 4 for example we can measure 3 4 fur (*i e* 3 fur 4 ch) or 2 mi 7 ch 6 fur ($\frac{6}{10}$ in the right hand triangle) A diagonal scale in common use shows tenths and hundredths of an inch

Scale of Chords For drawing angles of any required number of degrees a scale of chords is used, as shown below constructed on the following



principle In a circle of radius 0 to 60 any chord measured on this scale (*e g* 0 to 25 = 25 deg) will subtend an equal number of degrees at the



Reduced

centre of the circle Thus draw a circle with centre C and radii CA equal to the distance 0 to 60 Measure 0 to 40 on the scale of chords and mark off AD join DC, and the angle ACD = 40° Similarly, BE = 0 to 80 and BCE = 80°

SCALIGER, JOSEPH JUSTUS (1540–1609) — The tenth of the children of Julius Caesar Scaliger Mark Pattison describes Joseph Scaliger as " perhaps the most extra ordinary man who has ever devoted his life to letters " He was sent at 12 years of age to the Collège de Guyenne (*q v*), which was presided over by Jean Gelida In 1555 he became the amanuensis of his father who dictated to him from eighty to one hundred of his own Latin verses and in addition required Joseph to write a daily declamation This constant companionship with his learned father gave Joseph a love for knowledge In 1558 he went to Paris and attended lectures of Turnebus Scaliger is said to have read all the Greek poets in four months and formed a grammar of the language for himself whilst reading Scaliger then found a patron in the lord of La Roche Pozay and for thirty years lived as his client, half the time residing in his house This afforded Scaliger opportunity for travel and exercise in teaching His lord led a ' semi-military ' life and Scaliger often accompanied him and had to snatch a hasty read of a pocket classic by the light of a camp lantern ' Yet he made this wandering life " compatible not only with the systematic study of the whole of the remains of the ancient world but also with great original work In teaching Scaliger read and expounded to his pupil Louis the theory of military tactics in Polybius as they rode in the movements connected with the great Civil Wars in France which in 1572 reached a crisis in the massacre of St Bartholomew In the course of his travels with his pupil he became a Protestant He went in 1570 to Valence where he stayed nearly three years to study jurisprudence under the great lawyer Cujas In 1572 fortunately Geneva University welcomed him as a Huguenot refugee He continued the task of lecturing uncongenial as it was to him till 1574 and from 1574 to 1594 shared the war vicissitudes of the lord of La Roche-Pozay He took his turn of garrison duty and joined in *la chasse* Still in these circumstances he found time to produce editions of the Latin poets—Catullus Tibullus and Propertius—(1577) which altered the whole standard of editorship of classical texts and as Pattison says ' reclaimed criticism from a hap hazard guess work and made it a rational procedure subject to fixed laws

Estimate of His Original Work Still more remarkable was his editing of the Latin astronomer of the first century A D Manilius He was not satisfied with textual criticism however systematic but endeavoured to reproduce the whole of the astronomical ideas of antiquity and to work out an unified account of them in illustration of Manilius This aspect of scientific inquiry into ancient times was carried still further by Scaliger in his *de Emendatione Temporum* (1583) a work which may be said to have created for modern times " the science of chronology " (Pattison) Scaliger was the first to see clearly that all ancient history must be studied—not merely Rome and Greece and Palestine but all fragments of literature, all inscriptions on ancient monuments the whole of the subject-matter of historical knowledge outside as well as from within the writings of professed historians He took as a basis Eusebius's *Chronicle* written at the beginning of the fourth century A D There is probably no instance in literary or even in scientific discovery of greater acuteness in the working out of a hypothesis than

that whereby Scaliger guessed (or perceived) that a book was missing from Eusebius and attempted to supply that book in Greek from an intuitive selection of the whole range of discoverable archives of the ancient world The book suspected by Scaliger as missing was found in an old Armenian —translation—MS of the twelfth century in the Armenian convent at Venice in 1818 Scaliger was right in his supposition of another book In his re-construction he had gone "infinitely astray' Such astounding fertility of hypothesis founded on encyclopaedic knowledge and research induced the University of Leyden to secure Scaliger, in 1590 as the successor of Justus Lipsius There he lived and studied till his death in 1609 with a literary dictatorship more widely recognized "than even that of Erasmus had been' If we accept Mr R C Christie s judgment that Scaliger is "the greatest scholar of modern times we are all the more astonished to realize that he was substantially self-educated at any rate in his large measure of independence from institutional instruction F W

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SCALIGER, JULIUS CAESAR (1484–1558) —A classical scholar of the Renaissance born at Riva on Laxi Garda He claimed to be descended from the ancient prince of Verona the Duke Scala, but his enemies delared he was the son of a school master of Verona who took the name of Scaliger because he had a *scala* for his sign He was taught Latin at home and at 12 years of age became a page to the Emperor Maximilian and remained with him seventeen years After serving in the army he became a physician and studied Greek He was 40 years of age when he abandoned the army and became a physician He married and settled at Agen on the Garonne in 1529 and had fifteen children Nevertheless at Agen he seriously began his studies whilst practising as a physician He learned French Italian Spanish German Hungarian and Slavonian In 1531 (at 47 years of age) he wrote his *Pro M Tullio Cicerone contra Desiderium Erasmum* in answer to the *Ciceronianus* of Erasmus (*q v*) In 1544 he wrote his *de Causis Latinae Linguae* "the earliest Latin Grammar on scientific principles and following a scientific method' as Mr R C Christie described it In 1561 he wrote his *Poetices Libri septem* a book of distinct individuality in the history of criticism He maintains the superiority of the Roman to the Greek poets of Virgil to Homer and fixed on Virgil as the standard of poetry by which all other poetry was to be judged Justus Lipsius (*q v*) regarded Scaliger as one of the four greatest scholars who ever lived the others being Homer Hippocrates and Aristotle His contrast of scholarship is shown by his wealth of intuition and illustration F W

For references, see SCALIGER JOSEPH JUSTUS

SCANDINAVIAN LANGUAGES, THE TEACHING OF —In the term "Scandinavian languages" are comprised not only the languages which are spoken on the Scandinavian Peninsula (Swedish and Norwegian), but also Danish and Icelandic All these four languages are closely related, and may be regarded as different dialects developed from the same original form, Primitive Scandinavian which belongs to the Teutonic family of the Indo-European languages Before the age of the Vikings, all the Scandinavian peoples spoke practically the same language, but at about A D 800 Primitive Scandinavian began to separate itself into two dialects—Dano-Swedish and Norwegian— which two centuries later, differentiated into four —Swedish Danish Norwegian and Icelandic—the last being developed in Iceland which was colonized from Norway about A D 900 In the eleventh century the four peoples could still easily understand each other but in our days the differentiation has gone so far that a Swede has to learn Icelandic as a foreign language he understands spoken Norwegian but spoken Danish only with great difficulty

Icelandic The Western branch of the Scandinavian languages comprising Old Norwegian and Icelandic has preserved a more primitive character than the Eastern branch comprising Swedish and Danish The orthography of Modern Icelandic is also much more conservative than that of Modern Swedish or Danish and represents really the pronunciation of the fourteenth century though great phonetic changes have taken place since that time The long vowels still written *á é, ó* have been diphthongized to *au ai ou* in some cases *g* has passed into *w e g* in *ljuga* "to tell a lie' *ps pt* have passed into *fs ft ll rl nn rn* have passed into *dtl, dtn*—changes which do not appear in the orthography

In Old Icelandic there exists a very important literature the Eddic lays the Scaldic poetry and the Sagas The classical period of Icelandic is the thirteenth century The language of that period is of a primitive stamp and many of its inflections resemble those of ancient Gothic Compare *e g* the preterite of the verb *gripa* "to catch" sing *greip greipt greip* plur *gripom, gripof, gripo*, with the Gothic forms of the same tense *graip graipt graip gripum gripup gripun* The Icelandic language is very rich in inflections The old cases of the nouns are preserved The word *armr* "arm" *e g* has the following seven forms with different terminations according to case and number *armr arms arme arm armar arma, ǫrmom* And there are thirteen *different* forms in the declension of a regular adjective, *e g* of *spakr*, "wise" which in the several cases genders and numbers, undergoes the following transformations *spaks spǫkom spakan spǫk spakrar spakre, spaka, spakt, spǫko, spaker spakra spakar*

A peculiarity of all the Scandinavian languages is the definite terminal article which is suffixed to the indefinite form of the noun (*e g* Icel *ulfr enn* "*the* wolf") This article was originally a demonstrative pronoun used enclitically and in Old Icelandic it retains its original inflection independently of the noun The verbs too abound in forms The formation of the passive in *-sk* (*e g kallask* "to be called") is one of the chief characteristics that distinguish the Scandinavian languages from other Teutonic tongues It was originally a reflexive formation, the ending *sk* being derived from the pronoun *sik*, "oneself", and *kallask* first meant "to call oneself"

Swedish Icelandic represents the oldest and most conservative form of the Scandinavian languages, and throws much light on the historical

development of the others Swedish exhibits a more modern structure Among its distinctive features which appeared in the thirteenth century, the following may be noted original diphthongs are monophthongized *e g* Icel *auga*, "eye," has passed into Old Swedish *ǫgha*, *steinn* "stone," into *sten* etc In most cases, *ia* has become *iæ* (*e g* Icel *hiarta* "heart' Old Swed *hiærta*) and *iu* has passed into *y e g* Icel *fliūga* "to fly' Old Swed *flȳgha* The inflections of verbs and pronouns have been much simplified In the fifteenth century new important changes took place Long *a* passed into *å* (pronounced midway between the English vowels in call and "cold) and *io* into *iǫ e g* Icel *lata* "to let' Swed *låta* Icel *biorn* "bear Swed *biǫrn* (*ǫ* pronounced like the Engl vowel in "her ') short *i* in many cases has passed into long *e* (*e g* Icel *smiðr* "smith Swed *smed* Icel *lifa* to live Swed *leva*) *g* and *k* before palatal vowels (*e i y æ ǫ*) pass into "soft' sounds pronounced like Engl *j* and *ch* (*e g* Swed *giva* "to give' *kyrka* "church') *þ* (Engl *th*) passes into *t* (*e g* Icel *þing* 'thing Swed *ting*) During the age of the Reformation three new printing characters were introduced viz *a ä ö* instead of the old *aa æ ǫ* (approximately the sounds of the Engl vowels in "call' "care' "her) During the sixteenth and seventeenth centuries the simplification of the flectional system was continued In Modern Swedish the noun has only two cases, the ground form and the genitive All the genitives of the nouns both singular and plural now end in *s* (compare the Swed genitives *sågs* saw s *timmas* hour s *gatas* street s, to the corresponding Icelandic forms *sagar tima gǫto*) In the adjective the old case inflections have disappeared gradually and instead of the thirteen different forms in Icelandic, a modern Swedish adjective has only three, *e g* *stor*, 'great' (neuter) *stort*, (plur) *stora* The old termination *om* in the first person plural of the verb has been substituted by *a* from the third person Swed *vi äta*, "we eat,' for older *vi ätom*, which is still retained in some dialects The passive ends in *s e g* Swed *kallas*, "to be called [Icel *kallask*]

Since the introduction of printing the literary language has shown a very conservative tendency the consequence being that very few of the phonetic or flectional changes of the four last centuries appear in the present spelling The letters *sk* for instance, ceased to be pronounced separately before palatal vowels, and have passed into a simple *sh* sound like *stj* and *sj* in the same position The initial sounds of the words *skina*, 'to shine," *stjäla* "to steal" *själ* "soul' are all pronounced like that of the English word 'shine In words like *djup*, 'deep, *hjärta*, "heart *ljung* ling, the initial *d h*, and *l* disappeared from the pronunciation as early as the sixteenth century though they are still retained in the orthography In the last few years, attempts have been made to modernize the spelling, and a reform has been carried affecting the symbols of the *v* and *t* sounds Thus the combination *hv*, in which the *h* has long been mute, is now written with a simple *v* (*e g* older *hvad*, now written *vad* "what" *hvilken*, now written *vilken*, "who," etc *fv* between two vowels, and *f* at the end of a syllable are pronounced and now written *v* (*e g* older *hafva*, now *hava* "to have", *graf*, now *grav*, "grave,' etc), for older *dt*, now a single or double *t* has been substituted, principally in the neuter of adjectives and past participles where there is a *d* in the stem—*e g* *gott*, "good," older *godt* (masc *god*,) (*ett*) *tänt* (*ljus*), '(a) lighted (candle)," older *tändt* (infinitive *tända*) These improvements, however, have not yet been universally adopted, and several of the leading newspapers and the common dictionaries still retain the old spelling, which is undoubtedly a great inconvenience to the student of Swedish

Though the inflections of Modern Swedish have been considerably simplified as compared to Icelandic, the language is much richer in forms and terminations than English While all the plurals of nouns, roughly speaking, in English are formed by adding an *s* Swedish has no less than five different ways of forming the plural, viz , by adding *or*, *ar*, *er*, *n* for the first, second, third, and fourth declensions respectively while in the fifth the plural is like the singular (*e g* *våg or*, 'waves *hatt ar*, "hats" *kant er* "edges" *äpple n* "apples" *horn* "horns) There are four conjugations of the verb distinguished by the termination of the supine The supine is a form of the verb which is only used after the auxiliary verb *hava*, 'have and generally has the same form as the neuter of the past participle *e g* (*jag har*) *kallat* (supine) "(I have) called" but (*jag är*) *kallad* (past participle) "(I am) called In the spoken language the plural forms of the verb have now been supplanted by the singular (as earlier in Danish) a simplification which has not yet been introduced in writing Thus 'I ran' "we ran' are still in print rendered with *jag sprang vi sprungo* though in common speech *sprang* is used in both numbers

Danish This is the most "modern or advanced of all the Scandinavian languages Among the principal characteristics which distinguish Danish from Swedish may be mentioned the transition of common Scandinavian *k þ t* into *g b d* after a vowel, *e g* Swed *drake* Dan *drage* "dragon' Swed *pipa* Dan *pibe* "pipe Swed *ata* Dan *æde* 'to eat In most cases *gh* has passed into *w* (*v*) or *i* (*j*) *e g* Swed *plog* Dan *plov* "plough Swed *våga* Dan *veje* to weigh The several vowels in the terminations have become reduced to *e*, *e g* Swed *gator* Dan *gader* "streets' Swed *drakar* Dan *drager* dragons Swed *taga* Dan *tage* "to take The plural forms of the verb have been levelled under the singular, *e g* Dan *jag gav vi gav* "I gave we gave as compared to Swed *jag gav vi gåvo* These are the principal differences between Swedish and Danish which appear in print (It may be added that the sounds which in Swedish are denoted by the signs *å ä ö* in Danish still are generally written *aa æ ǫ* as in the old language) But the spelling is very wide of the pronunciation and in the spoken language of Copenhagen almost every sound is different from the corresponding Swedish First of all may be noticed what in phonetic terminology is called "the glottal catch' (Dan *stǫd*), peculiar to the Danish language, but unknown in Swedish as well as in Norwegian It is produced by shutting the vocal chords for a moment which causes a short interruption of the voice and results in a sound very much like a hiccough Outside Denmark the glottal catch sometimes is heard in Scotland and in the North of England *e g* after the "a" in "water" There are hardly any fast rules as to its use but the importance of employing it in the right place may be illustrated by the fact that words which otherwise would be identical in the

pronunciation are often distinguished only by the glottal catch Among other differences between Swedish and Danish not indicated in the orthography, the following deserve special attention After a vowel, Danish *d* has a sound like English *th* in the word "then' *e g gade* "street' Danish *g* in the middle or end of words has a spirantic sound similar to German *g* in *legen e g bage*, "to bake," *bog* "book" Danish *r* is like the French uvular *r* whereas Swedish *r* is produced with the tip of the tongue (a "point trill") In Swedish the consonants *b d g* are "voiced" as in English but the Danish corresponding sounds are "voiceless' In the system of vowels, there are also marked diver gencies The Danish long *a e g* in *gade*, is like the English *a* of 'care" but the same vowel of the corresponding Swedish word *gata* is more like the *a* of "far" The long Danish *u* is pronounced like French *ou* but the Swedish *u* is produced with an extremely narrow opening between the lips kept in a whistling position the result being a peculiar sound which is very difficult for foreigners to imitate The Norwegian *u* is pronounced midway between the Swedish and Danish sounds Scandinavian *y* has no equivalent in English It is like French *u* in *fumer* or German *ü* in *grüssen*

Norwegian. The development of the Norwegian language which together with the Icelandic made up the Western Scandinavian branch was inter rupted in the later Middle Ages chiefly owing to Norway's political union with Denmark During the sixteenth century Danish became the language of the educated classes in Norway especially in the towns and the vernacular with its many different dialects was spoken only by the country population Norwegian literature therefore from the age of the Reformation up to our own times, is practically written in Danish with slight differences as regards the vocabulary During the last century however since Norway's political union with Sweden (1814–1905) there has been a growing tendency to nationalize the language in vocabulary as well as in pronunciation In this latter respect such great difference is now established between Norwegian and Danish that the average Norwegian understands spoken Swedish much better than spoken Danish whereas the written (literary) language of Norway at least up till the year 1907 is still so like Danish that it is difficult especially for foreigners to tell the difference Through the spelling reform of 1907 the written language has to a large extent adapted itself to the current Norwegian pronunciation, which is more like Swedish In cases where *k p t* in Danish have passed into *g b d* Norwegian has kept the original sounds, *e g* Dan *gabe* "to yawn" Norweg *gape* (Swed *gapa*) Dan *gade* "street" Norweg *gate* (Swed *gata*) etc

In the middle of the nineteenth century the attempts to nationalize the language not only led to important spelling reforms and adaptation of purely Norwegian words from the rural dialects but also resulted in the creation of a new literary language called *landsmål* ("the language of the country"), based on the vocabulary and syntactical characteristics of some of the Western dialects which had remained unaffected by the Danish influence and retained the old and genuine Norwegian sounds and inflections Thanks to the energy of its originators and promoters, many of whom are prominent authors of fiction, this artificial "Norse-Norse" language already possesses a considerable literature and is compulsorily taught in the schools The aspiration of its adherents is to entirely supplant Dano-Norwegian which, however still preponderates and is likely to do so for a long time to come It is impossible at present to prognosticate which of the two languages will win in the long run But as Dano-Norwegian is actually being greatly modified by the *landsmål*, it is not inconceivable that a new form may some time emerge through the amalgamation of the two

Lastly a few words may be said about Scandinavian accent and intonation The general tendency is to place the stress on the first syllable Danish accent does not differ greatly from common European but Swedish and Norwegian have in many polysyllabic words kept the peculiar Old Scandinavian 'compound stress" which gives them such a strange character from a musical point of view and which is so difficult for foreigners to acquire The "tunes' of the words are not quite the same in Norway and Sweden but in both languages there are two distinct kinds of musical accent one used in originally monosyllabic words and corresponding to the glottal catch in Danish, *e g solen*, the definite form of *sol* "sun" the other in words which originally were composed of two or more syllables, *e g månen* the definite form of *måne* "moon" It is the latter accent with its principal stress on the first syllable com bined with a high pitch on the second which pre sents perhaps the greatest difficulty to the student of Swedish and Norwegian—a difficulty comparable to the "glottal catch and the "voiceless *g b d* of the Danish language I B

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SCATTERED HOMES — (See POOR LAW CHILDREN, EDUCATION OF)

SCHLEIERMACHER, FRIEDRICH ERNST DANIEL (1768-1834) —The son of an army chaplain born at Breslau and educated in the Moravian community who unable to endure the narrow and dogmatic form of religion taught by them proceeded to Halle to study theology and philosophy He became a preacher in Berlin (1797) and took an active share in the advancement of learning and the moral regeneration of Germany Besides a number of religious works he carried out a translation of Plato (1804–1810) After being professor at Halle from 1804 until Napoleon closed the university in 1806 he took part in the establishment of the new Frederick William University at Berlin and in 1810 became Professor of Theology there His lectures on theology and philosophy attracted large numbers of students and as a preacher he exercised a deep religious influence His efforts led in 1817 to the union of the Lutheran and Reformed churches of Prussia He wrote many essays on ethical problems and ancient philosophy

SCHOLARSHIP, THE ROMANCE OF —"Learning wrote Pattison "is a peculiar compound of memory imagination scientific habit, accurate observation all concentrated, through a prolonged period on the analysis of the remains of literature" Add taste and style, and we get the noblest ideal

of scholarship On the one hand the scholar touches the creative artist on the other, the man of science But the world while recognizing romance and adventure in the task of the imaginative writer and the researcher into physical phenomena is obtuse to the more restricted appeal of the scholar s calling Yet the annals of learning abound in heroic endurance and inspired achievement Scholarship is acquired and exercised in various fields If in what follows Greek and Latin literature predominate it is because having been studied longest they are most intimately linked with the humanities The acquiring of scholarship its employment for research its assimilation in life and literature may all fascinate the imagination

The Passion for Learning Hardly now can we understand the rapture with which at the Revival of Letters men flung themselves on the treasures of antiquity When Italy was learning of wandering Hellenists and adventurous *tramontani* who longed for Greek must take a journey like Gerard s in *The Cloister and the Hearth* an atmosphere of romance was about the humblest humanist Specially interesting for us are those who when the Renaissance crossed the Alps strove in Northern lands after the new learning Rabelais and Pierre Amy in their convent reading their yet unconfiscated Herodotus and Lucian Erasmus heroically wrestling with Greek and the stenches of Paris Still more astonishing are the misery and privation endured by mere boys to gain a grammar school education Thomas Platter (1499–1582) records in his quaint Swiss dialect how he left his home to tramp from town to town the fag of a Bacchant or older student The story entrancing as Huckleberry Finn s discloses an inferno of bullying hunger cold dirt disease and vermin Early Renaissance schools in Germany where grown men devotedly learned their Latin grammar alongside children are described in Allen s *Age of Erasmus* Now adays ' when the languid wayfarer finds a beaten high road it is curious to consider Joseph Scaliger battling his untaught way through Homer in three weeks Casaubon s herculean efforts to exhaust Greek literature are familiar through Pattison nor does Casaubon stand alone We echo Burton ' Tell me whether these men took pains

But the enthusiasm which delights in labour was no monopoly of the sixteenth or seventeenth century Wolf s biographers tell how at school he sat up like Milton night after night Who knowing John Mayor could forget that passion for study which persisted from early youth to extreme age ? A pathetic example is Arnold Hug (1832–1895) the Zurich editor of Plato s *Symposion* who his memory shattered by a stroke patiently set him self to unravel Greek with a dictionary Yet acquisition however wide the range however tenacious the memory must yield to the application of learning in which knowledge is directed by judgment Picturesque feats in mnemonics may amuse the populace and a scholar s reputation depend with them upon the number of languages he knows

The Scholar's Functions But the highest function of scholarship is to educe order out of chaos and establish truth The material often lies hid the remains of antiquity have to be drawn from darkness Even a dullard must be stirred by Pompeii The unearthing however of architectural relics and objects of ancient art belongs rather to archaeology than to scholarship Scholarship has the story, full of surprises and disappointments of the recovery of ancient literature It is exciting to reflect that, setting a few verses aside, our only hold on the tenderest of Roman poets is through a tenth century MS appropriately appearing at his native Verona in the thirteenth century and again vanishing All book-hunting joys pale before the ecstasy of lighting on a lost classic Petrarch's lifelong quest for Cicero was rewarded by the *Pro Archia* with its noble panegyric on literature and the *Letters to Atticus* Aurispa brought to Venice in 1423 a cargo of 238 Greek MSS " a thing imagination boggles at Some years earlier Poggio besides other *trouvailles* recovered Lucretius and Quintilian s *Institutio oratoria* We hardly hope now to see the rest of Livy or Tacitus but Egyptian dust heaps have lately yielded something of Sappho and Menander After the splendour of an unexpected find comes the systematic search for a missing MS Such a search entrancing as a detective story is told in Freytag s *Verlorene Handschrift*

Emendation But most MSS teem with blunders Before the actual text can be ascertained an emendator must arise His are the most brilliant of scholarship s victories There is something magical when a great scholar lays his finger on a hopeless passage and lo ! we have at times with high probability at times with absolute certainty the very words of our author The pleasure given by a palmary emendation is that of a work of art The glories of emendatory criticism have been eloquently extolled by Cobet and it is pleasant to find the great Dutch scholar s reverence for his masters the three Richards—Bentley Dawes Porson The gift of emendation is still conspicuous in English scholarship

Annotation The commentator s task may seem more prosaic Much indeed in any modern commentary is necessarily second hand Still the point of view is always changing and difficulties remain to stimulate genius It is good to turn from industrious compilators to scholars who have permanently associated their names with the authors of their devotion—Porson with Euripides Lachmann and Munro with Lucretius James Henry perambulating Europe with his wife s ashes and an Elzevir Vergil in his right hand breast pocket to write his *Aeneidea* reminds us that an annotator need not be a Dryas dust The adventurous spirit in scholarship is seen in treatises which by placing facts in a fresh light reach unexpected results Scaliger s epoch making *Emendatio Temporum* and Wolf s *Prolegomena to Homer* Such work must often be polemical The delight of battle is drunk in Bentley's *Dissertation on the Letters of Phalaris* that lasting monument of victorious controversy conducted by one who knows

Curiosa Classica Volumes might be devoted to the history of frauds forgeries, and insane theories Muretus foisting on Scaliger his fragment of a Roman dramatist Sigonius's sham *Consolatio* the Abbé Fourmont s inscriptions Simonides s ancient MSS dating from the latter half of the nineteenth century Sir Robert Ross's attempt to prove Tacitus s *Annals* a concoction of Poggio s—to prick such bubbles is among the diversions of scholarship

Modern Latin Literature Composition in a " dead ' language that lives for the scholar gives pleasure to himself and others Latin is the key to a vast Renaissance literature Barclay's *Argenis* the greatest is far from being the only, example of a Latin romance Miscellaneous satires and *facetiae*

are countless and time would fail to tell of even the chief masters of Latin verse who have left us lines that no true scholar would willingly let die Amateurs may be proud to practise an art beloved of Milton Cowley Gray Cowper and Landor With many it has proved a veritable passion Julius Scaliger boasts that his *Hymnus ad Bacchum*, 133 galliambics was thrown off in two hours! Samuel Johnson stricken in the night by paralysis prayed that his understanding might be spared 'This prayer that I might try the integrity of my faculties I made in Latin verse" Kennedy composed a Latin epigram in his sleep While by research it draws the veil from the past and penetrates the thoughts of the dead scholarship is also a permeating influence on life and literature In some writers such as Ben Jonson Burton and Taylor, we are overwhelmed by profuse references to the classics in others—Milton Gray and Tennyson—charmed by the delicacy of their echoes and adaptations In either case the reader of scholarly instincts and training enjoys an immense advantage over 'an ordinary man or a Christian Is there not a chapter in *Tom Jones* which none but the classical reader can taste? Hence the freemasonry among scholars the sense of kinship in literary experience

The Use of Quotation Classical quotation *teste* Johnson, 'is the *parole* of literary men all over the world The fashion is passing but it is a heavy sacrifice to part with a common literature above contemporary prejudices and conflicting nationalities Psychologists may be left to analyse the effect of an apposite quotation a casement opening on a past world When Mr Thomas Hardy observes "At melius fuerat non scribere our thoughts flash past the *Anatomy of Melancholy* to the rough hewn satires of the physician of Agen Boswell's Inuitus regina tuo de litore cessi when challenged for a quotation on being rowed from Mary Stuart's fort wafts us to the shades and Dido's unhappy loves Some of the most fortunate quotations have been heard at Westminster Those of Chatham and Gladstone are famous and among the happiest is Mr Asquith's compliment to Mr Balfour in Stetimus tela aspera contra Contulimusque manus experto credite quantus In clypeum adsurgat quo turbine torqueat hastam

Educational systems have their day But whatever share in the future be taken by Greek and Latin their fascination will still be felt by the few and alike by labourers in the field of research and by those who find in classical literature the main enjoyment and solace of their lives the torch will be handed on to all time E BENSLEY

SCHOLARSHIPS AND THEIR INFLUENCE ON SCHOOL CURRICULA, UNIVERSITY.—Scholarship examinations in theory govern only the curriculum of those who will be candidates for scholarships but they do in fact exercise influence on the curriculum of all The reason is that it is not possible, even if desirable to separate scholarship candidates from others and give them a curriculum of their own They will nearly all do some special work when the time for the examination draws near but the influence of the coming test is felt further down than at the stage immediately preceding the scholarship level It is not the existence of "Smalls and "Little-go' but the existence of the classical scholarships that has been the support of the classical sides in schools Classics for "Smalls" and "Little-go" can be crammed up in a few months, Classics for scholarships cannot Consequently, the scholarships at Oxford and Cambridge, and in a lesser degree, those of other universities can exercise a great influence upon the curricula of the 'public and secondary schools If their requirements are narrow and specialized the curricula of the schools will tend to be narrow and specialized also and the better the schools—the more candidates they can raise for scholarships—the greater will be the effect on their curricula This is especially noticeable in the development of Modern Sides" at the public schools There are comparatively few scholarships at the older universities for individual subjects of a "modern' character a fair though less than proportionate number for science mathematics and history very few for modern languages or English literature and hitherto none for 'modern subjects collectively One Oxford college has recently offered a scholarship for these "modern" subjects taken in a group with the special object of encouraging 'humanistic" studies at the top of Modern sides A further development of this plan might do much to clear Modern sides at the public schools from the present imputation that they mainly consist of boys who have no chance of reaching the Classical Sixth and thus obtaining the right and power to compete for the largest group of university scholarships

Co operation of Universities and Schools Plainly this question of the right nature of scholarship tests can only be settled by joint action between the schools and the universities The universities have no right to offer scholarships for proficiency of a kind which limits and specializes the school curriculum or part of it in an undesirable way The obligation to correct this tendency lies on the universities especially because they act as examiners in those tests which are specially intended to direct the curricula of schools and prevent them from becoming unduly narrow (*e g* the examinations of schools conducted by the Oxford and Cambridge Local and Joint Boards by the University of London and the Northern Universities Joint Board) It is no good requiring an education of a widely general type by means of a pass test if you encourage narrow specialisation for higher tests The result of such specialization must be that pupils will from an early age aim at a high standard in one subject only and be content with a lowish pass standard in the rest Even if it is difficult to maintain the pursuit of higher studies in such divergent subjects as Classics and Mathematics jointly up to an advanced stage it ought not to be difficult to prevent classical boys from dropping the serious study of Modern History though they have passed a normal examination in the subject at 16

The Beta plus Standard This is not however, to suggest that scholarships should be awarded on a fair attainment all round—what is often known as a "Beta plus' standard It is in fact important that this distinction should be made plain for definite plans are on foot the effects of which might be to award scholarships by preference to the boy who is 'Beta plus all round rather than to the boy who is 'Alpha' in one group of subjects and passable in the rest The "Beta plus" boy is indeed, the salt of the earth and must be provided for in some way if he cannot be self-supporting at the university But, if the scholarship proper is still to be regarded as a mark of distinction rather than a means of

assistance to the indigent, then the second-class boy should be treated differently from the scholar And it will be a bad time for this country when we prefer the ' Beta plus all round to the Alpha man It will mean that we are sinking to an industrious level of mediocrity rather than aiming further at the production and development of genius

G KENDALL

SCHOLASTICISM —This is the name given to all the philosophies which flourished between about A D 1000 and A D 1400 The name is derived from the word *scolasticus* meaning the chief teacher in an ecclesiastical school The various philosophies of the period have more in common in their externals than in their doctrines They stand apart from the Greek or modern philosophies in being taught at centres (*studia generalia* or universities) and in being orally developed the method being disputation and oral commentary Their doctrines are all coloured though differently by continual reference to authorities—philosophical (Aristotle) or religious (the Bible the Fathers ' Dionysius and Boethius) But it is unfair to the greater thinkers of the period to suppose that they were blindly acquiescent to whatever was orthodox or generally acceptable During the whole period we must distinguish the problem from what attracted attention to it or what were regarded as sources of evidence for solving it The problem was genuinely scientific or philosophical it referred to the nature and number of what is real Attention was first called to it by the attempt to explain language (hence the prominence of logic) and evidence for solving it was accepted almost by necessity from great books since the men of the Middle Ages were conscious of coming after a greatly superior age Their inheritance was too much for their brains Scholasticism was therefore really a new beginning of thought but it was burdened by confused information expressed in half understood and fragmentary documents and inconsequent current phrases It is necessary to recognize that for the greater thinkers the Eucharist for example presented itself as ' experience and the Trinity as fact vouched for by authority whose only ground again was experience so that scholasticism was never to them a mere explanation of phrases The direct experience referred to in scholasticism was limited being the experience of a social caste living a restricted life Most of the scholastics saw the world through painted glass and the greatest through the window of a friar s cell

Early Scholastics The first beginnings may be traced in Scotus Erigena (*c* A D 800–877) a Neo-Platonist rather than a scholastic After him follow commentators in monastic and cathedral schools on the *Isagoge* of Porphyry on Boethius and on Scripture The greatest of these were Anselm (1033–1109) Roscelinus and William of Champeaux (1070–1121) The central dispute at this date was that between Realism and Nominalism Some teachers (Roscellinus etc) held that common nouns stood for conventional classifications thus Socrates existed but not ' manhood Others (William etc) held that the distinction of individuals was " apparent ' and that the universals were real so Socrates was a mere accident but manhood real Neither side drew the logical consequences though each accused the other of doing so Of course if Roscellinus's Nominalism was correct then ' God was a merely conventional classification of Father Son, and Holy Ghost and if William's Realism was correct, then Father Son, and Holy Ghost were only appearances in the Real God The Trinity was useful to each side in refuting the other

Then came Abelard (1079–1142) and through him the establishment of mediaeval Aristotelianism Having confused the venerable William in his own lecture-room Abelard began to teach at Paris after attempts elsewhere The University of Paris arose and with it enthusiasm for learning Abelard was chiefly important for his method In his *Sic et Non* he abruptly contrasts contradictory texts from the accepted authorities (Gregory, Augustine, etc) and indicates in the preface that the solution of the contradiction can only come from reason Here was a vital principle In his results, Abelard expressed what may be called a moderate Realism His misfortunes have prejudiced modern writers in his favour but he does not seem to deserve credit for the advanced Conceptualism with which he is often connected He stands for universal *post rem* (*i e* likenesses are supposed by him to be material substrata in things and the word ' man for example refers to a sort of blurred reflection of all the men seen or imagined) The difficulty was not fairly faced at this time for there supervened a violent reaction against all thinking led by Bernard of Clairvaux (1091–1153) and by his not always honest contrivances Abelard was condemned Bernard was said by Gilbert de la Porrée a philosopher bishop to be incompetent to understand even the phrases he himself used Bernard possessed great power of speech fanatical enthusiasm against reasoning and an untiring energy It was a crisis The official Church might be committed to anti intellectualism Intellectual energy such as Abelard aroused meant disturbance and every orthodoxy not only the mediaeval rests upon the indolence and docility of the majority The persecution of intelligence did not cease as it has not ever ceased because the majority were tolerant but because they were divided in their opinions as to what to persecute The great victory of intelligence was won when it divided the majority against themselves and left them to a puzzled acquiescence in contradictory opinions

These opinions as ' authorities were collected by Peter Lombard (*Magister Sententiarum*) whose Sentences were intended to close the door to reason but led to a new outburst of commentary An introduction followed of more Latin translations of Aristotle and Arabian and Jewish commentaries (Avicenna Averroës Maimonides etc)

The new Orders of the Friars eventually in spite of opposition took up philosophical and scientific work at the universities and the Church was committed to support intelligence

The Influence of the Friars The first great name of the new period is that of Albert the Great (1193–1280) a Dominican Friar who taught at Paris and Cologne His opponents called him the " Ape of Aristotle ' he was rather a polymathist than a philosopher He did some strictly scientific work established the Abelard type of thought upon a more secure basis and suggested the rational distinction between two sources of knowledge Reason and Revelation Thus there was all the possibility of a free and full development of a rational understanding of man and the universe

Thomas Aquinas (1227–1274) the " Angelic Doctor ' made the next step in the development

Even his opponents, the Scotists, owed much to the great exactness of his method and the splendid co-ordination of his thought " In philosophy, Aquinas has been too great for his commentators or they too small for his attitude since they have remained only followers His philosophy is contained in the *Summa Theologica* the *Summa contra Gentiles* and the various *Opuscula* He developed the method and results of Albert the Great so skilfully that they seemed to be his own He accepts two sources of evidence as to the nature of things calling the one Revelation and the other Reason Reason meant for him Aristotelian method and results as modified by Arabian commentators Revelation was the Neo-Platonic system which had become intertwined with Christian tradition Thus the terms of the ' order of reason ' are *actus potentia materia forma* etc —all Aristotelian and in the ' order of revelation ' the terms are Trinity angels creation out of nothing the Word etc — all Neo-Platonic But Aquinas was quite aware that the fundamental problem was that of the value of authority he lacked only historical criticism and therefore confused the evidence as to what was said with the evidence as to the truth of what was said The Universe for him is a complex of real likenesses (qualities, etc) individualized at least in the case of sensuous or physical reals, by " matter (limitation or finitude) There are all kinds of reality the highest being called God who as a Trinity is a complex of real relations It is to be noted that in the famous proof of the existence of God Aquinas never concludes ' therefore God exists ' but ' therefore the first mover exists and this we call God ' It was therefore, open to Scotus to deny that we did call this God The details of experience especially of the psychical kind are dealt with in reference to the soul " which is proved to be the *form* of the body Its processes are described as an apparatus of " species ' phantasmata etc all which are intended to bridge the supposed gulf between matter and mind a gulf which Ockham abruptly dismissed as non existent The teaching of Aquinas was condemned in 1277 first by the Bishop of Paris and then by the Archbishop of Canterbury but the tide was too strong for the officials and Aristotelian Scholasticism continued to flourish In acuteness of analysis, the Thomistic metaphysic and psychology proved persuasive and his undoubted orthodoxy in practical issues made his form of scholasticism so strong that to many Scholasticism still means only Thomism

While Thomas dominated the Dominican schools the Franciscans seem to have been divided by contrary tendencies the one towards exact thinking the other towards ' Mystic reiteration of commonly accepted statements Roger Bacon belongs chiefly by way of contrast to the history of scholasticism He was at Paris in about 1248 afterwards at Oxford and again at Paris in 1257 having joined the Grey Friars He taught at Oxford in about 1267 suffered some persecution for his views and died some time after 1292 His attitude is more important than his conclusions He asserts that scientific truth is divine and requires no reconciling with any other but he says although its statement is the task of philosophers none of them is without grave deficiencies They chiefly lack experiment and exact mathematical knowledge Had his language been less violent and had he refrained from attacking officials, his influence would perhaps have been more effective As it was, the traditionalists among the Franciscans won the day

Giovanni Fidanza, called Bonaventure (1221–1274) was a Grey Friar who lectured at Paris at the same date as Aquinas, and eventually died Cardinal Bishop of Albano He was determined to give place to emotional experience His view of the world is coloured by his view of life and life for him is a passionate desire dependent on a sense of separation beginning by sensuous experience (the exterior light) it ends in an insight which has no reference to sense or the objects of sense Thus his influence maintained the value of such exceptional experience as may be given by " ecstasy ' and his system is a mystical mythology

The systematic period of Scholasticism ends with Johannes Duns Scotus (*c* 1274–1308) a Grey Friar of Oxford who lectured at Paris and died at Cologne He is said to have been an enthusiastic mathematician Although only 34 when he died, his philosophical works alone fill thirteen folio volumes without counting innumerable sermons and Biblical studies The fundamental idea is what we now call Hegelian with pragmatic elements in it ' Logic (*logica docens*) the discussion of thought is a description of Reality and its processes but the most important processes are those of the will rather than those of the intellect This is a protest against (1) the crudity of imagination which tests reality by visibility etc , and (2) the chasm between the ' thing and the thinker ' left by the Thomists The position was called ultra-Realism It embodied (1) the correct idea that likenesses and the objects of abstract mathematics qualities etc are just as real as " things , and (2) the mistake that the nature of the object ' depends upon ' experience or thought Upon this premise is built an elaborate " dialectic " of the universe leading up from things whose thatness (*haecceitas*) is the lowest grade of reality up to the *Ens Perfectissimum* or Absolute who is God Manhood is more real than individuality, Reality is the ultimate which all things are, and this is grasped not by intellectual vision but by passion (*amor Dei*) whose object is no Mohammedan Allah or Thomistic *Actus Purus* but intensely personal (*Omnipotens secundum intellectum Catholicorum* Op Oxon I 42 1) Here however, ends the use of reasoning The statements of theology are not conclusions to a logical process but expressions of the attitude of a will which is absolutely free The pretended reconciliation of reason and revelation is a mistaken concession to reason Thus ends the great systematizing period of Scholasticism what follows is either mere commentary or destructive criticism Putting aside theological differences it will be seen that both Thomas and Scotus agree that things " are composites made up of universals with the addition of individuality or particularity But whereas Thomas makes universals less fundamental than the particulars these universals are for Scotus more fundamental so much so that the Scotist world seemed to be a " ballet of bloodless categories '

William of Ockham The last great Scholastic was the critic William of Ockham (*c* 1280–1350), a Grey Friar of Oxford who taught chiefly in Paris and eventually gave up pure philosophy to devote his energies to political and ecclesiastical reform Being an enthusiast for the Franciscan ideal of poverty he has been neglected by later scholars and his anti papal activities contributed to his not

being studied during the Romantic revival of interest in Scholasticism In philosophy he is opposed chiefly to Scotus, the generally accepted master of the fourteenth century but his opposition to Aquinas is equally obvious The phrase known as "Occam's razor" which is found in Ockham s work in the form "pluralitas non est ponenda sine necessitate,' has connected his name with the general opposition to scholastic subtleties He stood in fact for simplicity and precision in philosophy But his conclusions were even more fundamental than his method He rejects the attempt to "reconcile revelation and reasoning, and claiming for revelation security from criticism he secures for reasoning immunity from theological interference He abruptly dismisses the search for a principle of individuation The universe contains particulars (ultimately real and not to be explained as made up of anything) and universals *in mente* (*i e* conceptually real) This last phrase seems to have implied to Ockham s mind some deficiency in reality but he never continued his metaphysical work On the other great problem that of substance Ockham shows that there is no stuff of which things are made that the particular is the only substance and that this remains just itself in however great a number of relations it may be found For want of a better word the followers of Ockham were called Terminists and sometimes inexactly Nominalists The ground was cleared by them for a direct attention to facts and a general scientific progress But philosophy disappeared in the general *débâcle* which followed the social changes of the fourteenth century

Scholasticism was never refuted or disproved Its methods were laughed out of existence and its results were misunderstood when the point of view had changed But its effect upon the new philosophy of Descartes Spinoza and Leibnitz was not less real because they were not conscious of the debt they owed to the generations which separated them from the Greeks C D B

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SCHOOLMASTER IN FICTION, THE —There are substantial reasons why no books about school life can ever be written in a mood of tranquil realism In the first place we have all of us suffered in some degree from educational processes It is as though a book were to be written about the administration of justice the condition being laid down that no one might write it who was not a judge or a barrister a policeman or a criminal The thing cannot be done impartially If a schoolmaster writes a story of school life he has suffered from the human boy if the ordinary man writes it he has suffered from the inhuman schoolmaster and the artistic nature has probably suffered most as being the most sensitive Thus a school story is bound more or less to be of the nature of *news from the seat of war* By the necessity of the case it must be the work of a combatant If the schoolmaster writes, he writes in the spirit of the conqueror the benevolent despot at best If the old boy writes it, he writes as one who has made a gallant fight for independence and liberty

Moreover, if such a book is written by a successful schoolmaster the chances are that he writes from too dignified a point of view, if by an unsuccessful schoolmaster, the point of view is apt to be undignified, almost vindictive If by a former schoolboy, the reminiscences of childhood and early youth are apt to be of a highly coloured and overemphatic kind I have heard men who were schoolcontemporaries of my own tell stories of their daring and prowess at school for confirmation of which I ransack my memory in vain Moreover, school life is a time when emotion is fresh and vivid but the gift of expression scanty and some of the most tragical scenes of my own boyhood were also the most dumb the most devoid of dramatic effect The emotions were all there at white heat but there was no power and indeed no opportunity of translating them into words Pathos anger dismay were all present but at the time they were neither analysed nor voiced

The result is that school books are apt to be written in a romantic and even melodramatic manner which aims at reproducing the tense excitement of sensational moments but can only do this by giving elaborate expression to feelings which found no expression at the time I remember a scene when I was a young schoolmaster which may serve to illustrate this A highly nervous and imaginative small boy had been severely caned by the captain of his house for something which he had not done He had been questioned but had lost his head and had given the impression that he was telling lies The thing had preyed upon his mind and he had told his tale to a friendly master in such a way that it seemed like a case of gross bullying It was this which was being investigated There were present the head master three masters and the house captain The head master stated the case very simply and clearly and asked the boy to meet it He did so in a few words which showed clearly that he had been hasty and severe but that his motives had been of the best The head master exonerated him warned him against impatience and dismissed him kindly enough The boy burst into tears and said "But won't Mr A—— say he believes me? Mr A—— was his house master who had sat in decorous silence hitherto and now replied Of course I believe you!

The whole affair only lasted a few minutes but I remember feeling at the time that the actual words said were no sort of index to the poignant emotions of the scene and that the boy would probably recollect the incident as one of the most serious experiences in the whole of his life Yet to give it its intense significance in a book would have demanded a whole string of dramatic utterances

Difficulties in Representing the Schoolmaster. That is why it is so difficult to represent the schoolmaster in fiction because if he is a man of any character his simplest sayings gain from his position an artistic and emotional trenchancy which the mere words literally reported entirely fail to convey The result is that the schoolmaster is drawn as a mass of emphatic passions because the boy full of *amour propre* sensitive imagination, childish self ab orption credits the man in power with a range of emotions of which he is generally wholly unconscious The boy is a combatant, aware of his weakness anxious to assert his independence suspicious indignant, while the schoolmaster is probably unaware of any crisis doing



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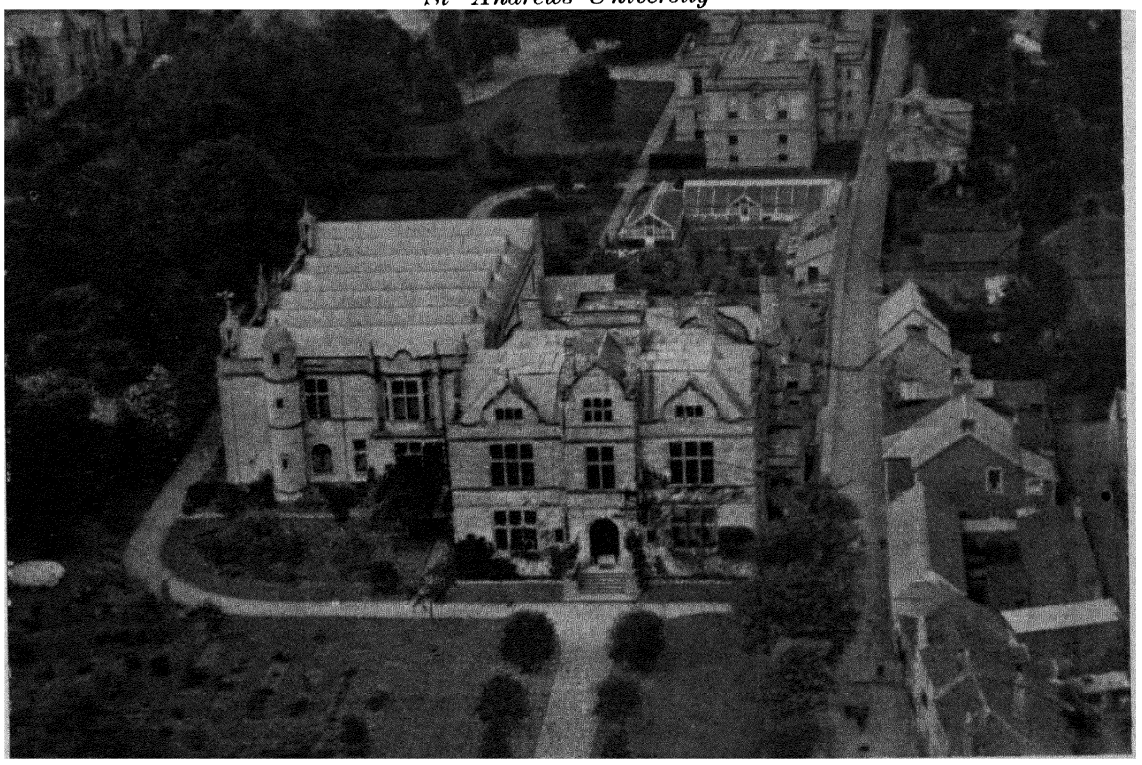

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what he has done a hundred times before, merely as a matter of business

A schoolmaster is occasionally confronted with the knowledge of this intense feeling in the background I remember once how a boy waited at the end of school to speak to me and when all the other boys had departed, asked me if anything was the matter I said "No,' and asked him in return why he wanted to know 'Oh you looked at me as you came into school in such a peculiar way, Sir' It is very difficult for a schoolmaster to realize his possible significance to imaginative boys, and it must be borne in mind that these are the sort of boys who generally write school stories at a later date But it is this very thing which is apt to make the portraiture unreal The schoolmaster goes placidly on his way faithfully performing a commonplace duty It is the boy who notices his mannerisms feels his moods and credits him with the vivid antagonism as well as the vivid goodwill which he himself feels

Then too comes in the fact that the young creature is by the nature of the case bound to misunderstand the mental processes and habits of older persons He thinks of them as having faults of a kind but he does not think of these faults as being the same sort of faults of which he is conscious in himself If he respects a master he credits him with a deep serenity of virtue if he dislikes a master he thinks of him as inhuman tyrannous and malign He believes him to be pursuing a settled and deliberate policy he does not realize that the master is a mild opportunist like himself drifting along and doing the best he can He believes the master to be deeply preoccupied with his educational duties and powers instead of being as is often the case a kindly and simple sort of person anxious to do his duty but finding a good deal of it very mechanical Because a schoolmaster is relieved from the fears and anxieties of boyhood the boy is apt to believe that he has neither fears nor anxieties It is this that makes boys so utterly merciless to weak masters that they are wholly unable to realize the agonies of shame and disgust that a thoroughly inefficient teacher may feel There is nothing so humiliating as the insolence of the weak And it is here that the deep psychological mystery of schoolmastering lies in the impossibility of predicting which men will have the unquestioned command of their boys and which men will fail to control them I have known distinguished men of strong character and will who have failed egregiously as schoolmasters and have afterwards achieved conspicuous success I have known lazy timid sensitive men who have never had the smallest difficulty in preserving discipline Yet in fiction dealing with school life this is never done justice to A man with a little kindly tact may be credited by boys with every virtue and every grace A man of rugged force and high emotion may be regarded as a tiresome ass The fact is that a superficial sympathy and a knack of resourcefulness are often worth more to a schoolmaster than courage and energy Boys value serenity highly, and will do much to avoid what they call fuss or bother Thus the hero among schoolmasters in the eyes of the boy is not the tumultuous volcanic, inspiring man so much as the friendly and accessible sensible man, who governs easily and treats the individual boy with a pleasant respect so long as things go well

The Schoolmaster in Novels. Let me apply a few of these general principles to some of the best-known fictions of school life *Tom Brown's School-days*, though the conditions depicted are strange and remote to modern boys, owes its success to a natural breeziness of outlook and to a human presentment of a schoolmaster of commanding genius Dr Arnold who had the qualities which make for impressive leadership in any walk of life

In *Eric or Little by Little* on the other hand, we have the *ne plus ultra* of romanticism Let me quote the scene where Mr Rose canes the villain Brigson before the boys till he rolls on the floor calling out "the devil—the devil"

"There! cease to blaspheme and get up" said the master blowing out a cloud of fiery indignation "There, Sir Retribution comes at last, leaden footed but iron handed A long catalogue of sins is visited on you to night and not only on your shrinking body but on your conscience too if you have one left Let those red marks be token that your reign is ended

But though *Eric* does not in the least resemble life it has the attraction of the hardiest and most vigorous kind of melodrama which many of us would prefer life to resemble

The Lanchester Tradition by Mr G F Bradby a book of considerable force and humour, is a romance in the sense that the characters are personified qualities rather than inconsistent human beings It represents the conflict of shrewd patience, as typified by the new head master Mr Flaggon, with noisy and vulgar convention as typified by the stupid and old fashioned house master, Mr Chowdler

Mr Perrin and Mr Trail by Mr Hugh Walpole, is a piece of severe and relentless realism It represents a second rate school of a pretentious type, administered by a bullying head master and by cynical and disappointed assistants The book however crosses the border line of romance owing to the incipient lunacy of Mr Perrin and partly, too owing to the conscious disgust of the masters for their trade A dreary acquiescence in base and precarious traditions would perhaps, be more true to life but the book has a sharp edge and great perception of a somewhat bitter kind

In *Stalky and Co* a book full to the brim of vitality and colour the treatment of the masters is frankly romantic They are mere foils to the courage inventiveness and resourcefulness of the redoubtable Trio The masters themselves are frank personifications of vices and virtues from the malignant Prout and the bombastic King to the indulgent Padre and the incalculable Head The Head himself occasionally redresses the balance of justice by a liberal distribution of stripes and a ruggedness of imperturbability on which the waves of irrepressible boyhood beat in vain and he is duly crowned with glory and honour The Padre is saved from the worst collisions by being only a spiritual director and not an official instructor and he is a tolerant and large minded man enough But in the case of Prout and King there is an almost vindictive concentration of the faults that bloom luxuriantly in the practice of petty authority by stupid and unsympathetic men, and in defence of my profession I must say that, though I have known many schoolmasters familiarly, I have never known men so wholly inefficient and inhuman, or men so rankly attached to all the baser elements

of the trade—self parade suspiciousness and treachery—as Prout and King That such pictures can be drawn at all or considered even satirically typical is a clear proof of the robustness of the faith in public school education if a boy s worst foe can be his house-master who can only serve the purpose of the drunken Helot as a specimen of what no honest and decent boy could think without a shudder of becoming

There is more realism in the treatment of the masters in that subtle and beautiful book *Sinister Street* The smoky hairy thunderous head master Dr Brownjohn has an air of actuality though even here in the scene where the hero intervenes at a masters' meeting to save two trembling culprits the romantic steed runs away with the author and the boy becomes the guiding star of a muddled Sanhedrin Mr Crayc with his bright archaeology and chatty scholarship is a living figure and so is the deaf suspicious and yet wholly amiable and inefficient Mr Caryll Mr Neech too with his outcries of "mooncalf and "abysmal ape —the sort of vituperation which quite effective masters must be forgiven for thinking funny—is a man and not a convention but even this ingenious portraiture is mainly concerned with eccentricities and sharply salient features and misses the kind of school master who in my experience is common enough namely a competent and paternal man neither prig nor fool who does his best strictly good humouredly and without incurring either con tempt or dislike, to discharge a difficult and delicate task

From their longer tradition and their natural prestige the Public Schools have necessarily tended to monopolize the attention of the novelist in search of characters But the elementary schools have not been altogether neglected particularly of late years Dickens who loved not school masters does not provide a very pleasant gallery Mr McChoakumchild and Bradley Headstone are not inspiring characters and we have the implication that all elementary schoolmasters resemble them being turned at the same time in the same factory on the same principles like so many pianoforte legs Somehow curriculum and school regulations bulk largely in fiction dealing with the elementary schools Too often from the master s point of view there is a grim background of oppression and dread A story published some thirty five years ago about London Board school life is typical of the gloomy strain in which this subject is usually treated But though its title *Driven to Suicide* is more startling than Mr Roger Wray s *The Soul of a Teacher* (1915) the more recent book retains a great deal of the old atmos phere A more cheerful writer is Mr Paul Neuman who in his *Chignet Street* (1914) writes of the elementary schoolmaster with sympathy and under standing To the school of rebels belongs Mr A S Neill who in *A Dominie s Log* (1916) and *A Dominie Dismissed* (1917) writes in a way to gladden the heart of Dr Montessori and to encourage the Tolstoyians To the same class belongs *The Evolution of Dodd* that had an amazing success in the United States Schoolmasters in the making have not escaped the attention of the enterprising novelist as is shown in Robert Barr s *The Measure of he Rule* But the classic of the Training College has yet to be written

In the fiction of to day the tendency is to be severely critical with the schoolmaster and to treat him as a peg on which to hang more or less crude educational theories There is a moral underlying even such books as Mr S McKenna s *Sonia* while such a frankly farcical story as Mr F Watson s *The Humphries Touch* itself is not without its effectively critical side As a school-master himself it is perhaps only natural that Mr S P B Mais should write in a professional way not only in his *Schoolmaster s Diary* but also in his less technical novels To some extent he is responsible for one of the most striking developments of fictional criticism of the schoolmaster, for it was one of his pupils Mr Alec Waugh who while he was actually a schoolboy wrote *The Loom of Youth* (1917) a novel that has roused quite an extraordinary amount of public interest In his pages the masters cut a sorry figure The story is photographically true in detail but contrives to convey an impression of Public School life that is certainly untrue to life Two other schoolboys in fact have been impelled to write little books on the other side but neither Martin Brown s *A Dream of Youth* nor Jack Hood s *The Heart of a Schoolboy* ranks as fiction On the more con-structive side we must take note of the work of Mr H G Wells Though he spends a large part of his time in girding at schoolmasters he does not confine himself to faultfinding and in his *The Undying Fire* we find an interesting and suggestive picture of the public schoolmaster that is to be His *Joan and Peter* can hardly be called fiction but is rather an educational tract in which his ideas are presented in a persuasively concrete form The schoolmaster is apparently destined to appear more frequently than ever in the pages of fiction from the increasing tendency of novelists to begin with the school days of their heroes All those long trilogy works lend themselves naturally to finding a niche for the schoolmaster The chances are that his treatment in the future will be more sympathetic than in the past for his difficulties are being gradually appreciated by the outsider

It is indeed an intricate business to teach a class of twenty boys, with all their prejudices and preferences subjects in which they are not much interested without being dull and to keep order without oppression or injustice Further at one of the most difficult and impulsive periods of human life to watch boys vigilantly and yet not suspiciously for tendencies which if unchecked may ruin a promising life to keep a little alert fitful eager society clean minded sensible and good to know whom to drive and whom to humour never to despair and yet to be surprised at nothing, such is the task to which the schoolmaster has to set himself Is it to be wondered that he is not uniformly successful or that he lends himself to caricature ? The wonder rather is that so many men win the loyal regard and the grateful affection of so many of their flock Perhaps the sharp satire that schoolmasters incur is after all a proof of effectiveness and an unconscious confession that they play a larger part in the drama of school life than the romantic boy who laughs at them, obeys them, and on the whole respects them is inclined in the heyday of youth to admit or even recognize

SCHOOLMASTERS THE SOCIETY OF.—This was first formed in 1798 on a principle of Life Assurance for the benefit of such subscribing

members as were masters of endowed and boarding schools In 1821 the Assurance Society was dissolved and the Society became a charitable institution Subsequently it enlarged its design to include the masters of proprietary schools

By its present rules it gives assistance to necessitous masters of all schools, and not coming under the Elementary Education Act and to their widows and orphans provided that such masters shall have been continuously engaged in teaching for not less than five years

The Society is principally dependent upon the subscriptions of schoolmasters

SCHOOL MEALS —The public feeding of poor children generally originated in the natural impulse of kindly people to fulfil their Christian duty of "feeding the hungry' with little thought of physiological or national considerations Teachers and educational authorities began meanwhile, to realize the cruelty and futility of attempting the formal education of ill fed children and gradually co-ordination was established between the voluntary feeding agencies and the school whose organization proved so convenient for the selection of children and distribution of tickets Voluntary effort however proved inadequate inefficient palliative and uneducative it lacked method and continuity and it pressed unfairly on a kindly minority of the community

The alarming revelations of early malnutrition amongst recruits medically rejected during the Boer War focused public attention on the national aspect of the problem and in 1906 was passed the Education (Provision of Meals) Act permitting the expenditure of a halfpenny rate upon school meals for necessitous children After much controversy, raised by doctrinaires fearful of "undermining parental responsibility ' the Act has been generally adopted where necessary The exigencies of the Great European War led to a further Act removing the halfpenny limit and permitting meals during holidays

Organization Meals are supplied free to "necessitous children and to others paying part or full cost and milk or cod liver oil to delicate children on similar terms The organization of school meals is usually worked through voluntary school care committees a Central Care Sub Committee of the Education Authority and a staff of paid organizers for co ordinating and supplementing the voluntary efforts and meals may be provided by private caterers as in London or by a municipal canteen as in Bradford

Selective and Universal Feeding Certain difficulties arising from selective feeding have resulted in a growing plea for universal feeding *i e* a mid day meal supplied as part of the day's "education' to all children willing to partake The difficulties of selective feeding on the economic basis are many the lack of suitable voluntary visitors their varying standards the enormous expenditure of time and energy better spent on more constructive efforts for the family the invidious distinctions sometimes drawn between and consciously felt by children fed and unfed the unfortunate relations set up by tactless visitors the refusal of meals on moral and disciplinary grounds unconnected with the child s need and the not infrequent withdrawals of really necessitous children by sensitive parents

On the other hand, the selection of children by doctors on the score of physical need without reference to economic poverty would tend to include children delicate in spite of good feeding, and to exclude economically necessitous children until malnutrition became acute enough to show itself, a policy obviously subversive of the spirit of the Act On behalf of the universal meal, we may plead the abolition of all invidious distinctions and of friction caused by clash of policy the guarantee that every necessitous child could obtain at least one good meal daily, and the economy of cooking on a large scale The meal shared by all classes would be more educatively served and supervized and might have valuable socializing effects whilst, seeing that working people pay more in rates in proportion to their income than any other class, they would be no more 'free or "subversive of parental responsibility' than are the present meals

Practical Difficulties The universal school meal however involves almost insuperable difficulties, *e g* the practical problem of seating and feeding 400 000–500 000 children in London alone the impossibility of allowing reasonable choice of food to many diverse digestions and tastes [for whilst deprecating "daintiness individual idiosyncrasy has to be reckoned with] and the difficulty of producing 'tasty food in very large quantities Add to these the danger of many mothers going without their own meal, since no woman cooks for herself alone and the further danger that having once secured a daily meal for every child the community might close its eyes to other and more serious needs of the poor home and the universal meal in the average elementary school stands condemned

The Only Solution The true remedy is to render school meals unnecessary Adequate measures for the workers *e g* efficient education fitting them industrially and morally for labour; work for all with a wage permitting mothers to follow their own high calling without interruption, decent houses with adequate space and conveniences the extension of such communal kitchens laundries etc as would provide reasonable choice whilst lessening domestic labour—these with drastic measures for all shirkers would be the best "Education (Provision of Meals) Act" for our children

C E G

SCHOOL NURSE, THE —The profession of school nurse should be adopted only by those who have a genuine love of children for without this love it is impossible to do the best for the little ones under their care The work of the school nurse is of racial and national importance for on her faithful attention to detail largely depends the success or otherwise of the rules of health advice and treatment prescribed by the school doctors Before specializing in school work, the nurse should take a three years training in a general hospital with a recognized training school attached Part of this time should be passed in the Casualty Department the knowledge which the nurse obtains there will be invaluable to her in her after career She should, by some means or other, acquire a special knowledge of fever work and if her work lies in the country, it will be a great advantage to her and to the people among whom she works if she has the C M B certificate She should also have a good knowledge of the diseases most common in children under school age and the right treatment for the simple diseases

of the trade—self parade, suspiciousness and treachery—as Prout and King That such pictures can be drawn at all or considered even satirically typical is a clear proof of the robustness of the faith in public school education if a boy s worst foe can be his house-master, who can only serve the purpose of the drunken Helot as a specimen of what no honest and decent boy could think without a shudder of becoming

There is more realism in the treatment of the masters in that subtle and beautiful book *Sinister Street* The smoky hairy thunderous head master Dr Brownjohn has an air of actuality though even here in the scene where the hero intervenes at a masters' meeting to save two trembling culprits the romantic steed runs away with the author and the boy becomes the guiding star of a muddled Sanhedrin Mr Crayc ' with his bright archaeology and chatty scholarship is a living figure and so is the deaf suspicious and yet wholly amiable and inefficient Mr Caryll Mr Neech too with his outcries of mooncalf and " abysmal ape —the sort of vituperation which quite effective masters must be forgiven for thinking funny—is a man and not a convention but even this ingenious portraiture is mainly concerned with eccentricities and sharply salient features and misses the kind of school master who in my experience is common enough namely a competent and paternal man neither prig nor fool who does his best strictly good humouredly and without incurring either con tempt or dislike to discharge a difficult and delicate task

From their longer tradition and their natural prestige the Public Schools have necessarily tended to monopolize the attention of the novelist in search of characters But the elementary schools have not been altogether neglected particularly of late years Dickens who loved not school masters does not provide a very pleasant gallery Mr McChoakumchild and Bradley Headstone are not inspiring characters and w have the implica tion that all elementary schoolmasters resemble them being turned at the same time in the same factory on the same principles like so many pianoforte legs Somehow curriculum and school regulations bulk largely in fiction dealing with the elementary schools Too often from the master s point of view there is a grim background of oppression and dread A story published some thirty five years ago about London Board school life is typical of the gloomy strain in which this subject is usually treated But though its title *Driven to Suicide* is more startling than Mr Roger Wray s *The Soul of a Teacher* (1915) the more recent book retains a great deal of the old atmos phere A more cheerful writer is Mr Paul Neuman who in his *Chignel Street* (1914) writes of the elementary schoolmaster with sympathy and under standing To the school of rebels belongs Mr A S Neill who in *A Dominie s Log* (1916) and *A Dominie Dismissed* (1917) writes in a way to gladden the heart of Dr Montessori and to encourage the Tolstoyians To the same class belongs *The Evolution of Dodd* that had an amazing success in the United States Schoolmasters in the making have not escaped the attention of the enterprising novelist as is shown in Robert Barr s *The Measure of he Rule* But the classic of the Training College has yet to be written

In the fiction of to day the tendency is to be severely critical with the schoolmaster and to treat him as a peg on which to hang more or less crude educational theories There is a moral underlying even such books as Mr S McKenna's *Sonia* while such a frankly farcical story as Mr F Watson s *The Humphries Touch* itself is not without its effectively critical side As a school-master himself it is perhaps only natural that Mr S P B Mais should write in a professional way not only in his *Schoolmaster s Diary* but also in his less technical novels To some extent he is responsible for one of the most striking developments of fictional criticism of the schoolmaster, for it was one of his pupils, Mr Alec Waugh, who, while he was actually a schoolboy wrote *The Loom of Youth* (1917) a novel that has roused quite an extraordinary amount of public interest In his pages the masters cut a sorry figure The story is photographically true in detail but contrives to convey an impression of Public School life that is certainly untrue to life Two other schoolboys in fact have been impelled to write little books on the other side but neither Martin Brown s *A Dream of Youth* nor Jack Hood s *The Heart of a Schoolboy* ranks as fiction On the more con-structive side we must take note of the work of Mr H G Wells Though he spends a large part of his time in girding at schoolmasters he does not confine himself to faultfinding and in his *The Undying Fire* we find an interesting and suggestive picture of the public schoolmaster that is to be His *Joan and Peter* can hardly be called fiction but is rather an educational tract in which his ideas are presented in a persuasively concrete form The schoolmaster is apparently destined to appear more frequently than ever in the pages of fiction from the increasing tendency of novelists to begin with the school days of their heroes All those long trilogy works lend themselves naturally to finding a niche for the schoolmaster The chances are that his treatment in the future will be more sympathetic than in the past for his difficulties are being gradually appreciated by the outsider

It is indeed an intricate business to teach a class of twenty boys with all their prejudices and preferences, subjects in which they are not much interested without being dull and to keep order without oppression or injustice Further at one of the most difficult and impulsive periods of human life to watch boys vigilantly and yet not suspiciously for tendencies which if unchecked may ruin a promising life to keep a little, alert fitful eager society clean minded sensible and good to know whom to drive and whom to humour never to despair and yet to be surprised at nothing such is the task to which the schoolmaster has to set himself Is it to be wondered that he is not uniformly successful or that he lends himself to caricature ? The wonder rather is that so many men win the loyal regard and the grateful affection of so many of their flock Perhaps the sharp satire that schoolmasters incur is after all a proof of effectiveness and an unconscious confession that they play a larger part in the drama of school life than the romantic boy who laughs at them, obeys them and on the whole respects them is inclined in the heyday of youth to admit or even recognize

SCHOOLMASTERS THE SOCIETY OF.—This was first formed in 1798 on a principle of Life Assurance for the benefit of such subscribing

members as were masters of endowed and boarding schools In 1821 the Assurance Society was dissolved and the Society became a charitable institution Subsequently it enlarged its design to include the masters of proprietary schools

By its present rules it gives assistance to necessitous masters of all schools and not coming under the Elementary Education Act and to their widows and orphans provided that such masters shall have been continuously engaged in teaching for not less than five years

The Society is principally dependent upon the subscriptions of schoolmasters

SCHOOL MEALS —The public feeding of poor children generally originated in the natural impulse of kindly people to fulfil their Christian duty of ' feeding the hungry ' with little thought of physiological or national considerations Teachers and educational authorities began meanwhile to realize the cruelty and futility of attempting the formal education of ill-fed children and gradually co-ordination was established between the voluntary feeding agencies and the school whose organization proved so convenient for the selection of children and distribution of tickets Voluntary effort however proved inadequate inefficient palliative and uneducative it lacked method and continuity and it pressed unfairly on a kindly minority of the community

The alarming revelations of early malnutrition amongst recruits medically rejected during the Boer War focused public attention on the national aspect of the problem and in 1906 was passed the Education (Provision of Meals) Act permitting the expenditure of a halfpenny rate upon school meals for necessitous children After much controversy, raised by doctrinaires fearful of ' undermining parental responsibility ' the Act has been generally adopted where necessary The exigencies of the Great European War led to a further Act removing the halfpenny limit and permitting meals during holidays

Organization Meals are supplied free to " necessitous ' children and to others paying part or full cost and milk or cod liver oil to delicate children on similar terms The organization of school meals is usually worked through voluntary school care committees a Central Care Sub Committee of the Education Authority and a staff of paid organizers for co-ordinating and supplementing the voluntary efforts and meals may be provided by private caterers as in London or by a municipal canteen as in Bradford

Selective and Universal Feeding Certain difficulties arising from selective feeding have resulted in a growing plea for universal feeding, *i e* a mid day meal supplied as part of the day s " education ' to all children willing to partake The difficulties of selective feeding on the economic basis are many the lack of suitable voluntary visitors their varying standards the enormous expenditure of time and energy better spent on more constructive efforts for the family the invidious distinctions sometimes drawn between and consciously felt by children fed and unfed the unfortunate relations set up by tactless visitors the refusal of meals on moral and disciplinary grounds unconnected with the child s need and the not infrequent withdrawals of really necessitous children by sensitive parents

On the other hand, the selection of children by doctors on the score of physical need without reference to economic poverty would tend to include children delicate in spite of good feeding and to exclude economically necessitous children until malnutrition became acute enough to show itself, a policy obviously subversive of the spirit of the Act On behalf of the universal meal, we may plead the abolition of all invidious distinctions and of friction caused by clash of policy the guarantee that every necessitous child could obtain at least one good meal daily, and the economy of cooking on a large scale The meal shared by all classes would be more educatively served and supervized, and might have valuable socializing effects whilst, seeing that working people pay more in rates in proportion to their income than any other class they would be no more " free or " subversive of parental responsibility than are the present meals

Practical Difficulties The universal school meal, however involves almost insuperable difficulties, *e g* the practical problem of seating and feeding 400 000–500 000 children in London alone the impossibility of allowing reasonable choice of food to many diverse digestions and tastes [for, whilst deprecating ' daintiness ' individual idiosyncrasy has to be reckoned with] and the difficulty of producing tasty food in very large quantities Add to these the danger of many mothers going without their own meal since no woman cooks for herself alone and the further danger that having once secured a daily meal for every child, the community might close its eyes to other and more serious needs of the poor home, and the universal meal in the average elementary school stands condemned

The Only Solution The true remedy is to render school meals unnecessary Adequate measures for the workers *e g* efficient education fitting them industrially and morally for labour, work for all with a wage permitting mothers to follow their own high calling without interruption, decent houses with adequate space and conveniences the extension of such communal kitchens laundries, etc , as would provide reasonable choice whilst lessening domestic labour—these with drastic measures for all shirkers would be the best " Education (Provision of Meals) Act " for our children

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of young children, so that she may be able intelligently to follow out the doctor's orders in regard to pupils of tender years in the nursery schools shortly to be established The school nurse would be wise to work for at least six months as a district nurse before specializing in school work as thus she will get a more thorough insight into the lives of the poor and their possibilities and impossibilities, than in any other way

There are however other special qualities and knowledge which a school nurse should possess She will be consulted on all manner of subjects by the mothers of the school children whom she visits and should be able to give " first aid " on all matters pertaining to the welfare of the people among whom she works That is to say she should be able to tell them where to go for good expert advice on matters of law and insurance as to the placing out in life of their children and other kindred matters

The school nurse should have a good working knowledge of the principles underlying the administration of State and voluntary funds for the welfare of the less comfortable classes otherwise she may find herself inadvertently encouraging thriftlessness and waste

Professional and Social Work Her professional and social work in any given locality will depend on the individual views of the local authority under which she works It is the personal opinion of the present writer that a great deal of the medical home visiting should be left to a well trained school nurse with a good all round knowledge of affairs rather than to voluntary workers who with the best will in the world are not experts in medical matters and do not inspire in the mothers the same confidence as does a " real nurse " who obviously knows what she is talking about and cannot be put down by the many specious arguments brought forward by the overworked mothers of the poor as to why " Tommy does not need treatment in the face of very obvious defects The voluntary lay worker has her own very useful sphere but she should not be allowed to entrench on the professional sphere of the nurse which is to try to get the mother to follow out the directions of the doctor

The nurse is always present at the doctor s inspection and helps to undress the children weigh them and fill in the necessary forms If there is no treatment centre directly attached to the school it should be the duty of the nurse to advise the mother as to the best place at which to get the particular ailment of each child treated

When not engaged with the doctor the nurse holds cleansing inspections of her own and when she is in the school is often consulted as to whether such and such a child is ill enough to see the doctor at a special examination and so on

There should be one nurse attached to each school and it should be her business to get thoroughly acquainted with the health of all the children under her care and be directly responsible for it to the doctor attached to the particular school Some local authorities make their nurses specialize too much *i e* some always attend medical inspection and some always do cleansing work so that they are attached to a large number of schools and never get into that personal relation with the home of their charges which is so important if they are to have a real influence over the welfare of the children under their care

The work of the school nurse is fairly strenuous, but there are decided advantages in the fact that the nurse has her Sundays and evenings free and is able to live in her own home if she is fortunate enough to possess one M S J

SCHOOL SCHOLARSHIP SYSTEM, THE —The beginnings of the English scholarship system date from the Middle Ages Until the last half century the main object of the founders and trustees of scholarships was the benefit of the individual recipients (*i e* the exceptionally able and industrious children of poor parents were to be given opportunities for higher education) The pious founder was usually influenced by a sentiment of affection for his place of birth or of early training and the scholarships were usually restricted to boys or girls born in the locality With the recognition of education as a national concern the whole problem changed not only in respect of the scope and machinery of award but also in aim and spirit With universal elementary education there has arisen within the last thirty years a demand from new sections of the community for access to secondary schools Class distinctions, which have been perhaps the most fundamental thing in English life are now being profoundly modified and the tendency is to re stratify society on an intellectual basis

The Education Act of 1902 placed the burden of organizing secondary and technical education upon the State and the county councils and since all grades of education were to be henceforth unified so far as they depended upon grants from the national and local funds the way was open for the extension to all classes however poor of the advantages of all types of education from the primary school to the university The educational ladder which had been regarded as an ideal [realized in certain places (*e g* Birmingham) for twenty years] was felt at the beginning of the twentieth century to be too narrow A broad corridor between the primary and secondary schools was now demanded and was in fact opened by a regulation with regard to the allocation of State grants to secondary schools According to Regulation 20 a school can only receive Treasury grants on the full scale if free places are provided for ex elementary school children to at least the proportion of 25 per cent of all the admissions

The Education Act, 1918 This has transformed the whole situation No longer a mere corridor but a " highway " of learning has been planned Section 4 (4) provides that no child or young person shall be debarred from any form of instruction by which they are able to profit through inability to pay fees Moreover although the giving of maintenance grants is not obligatory it is clearly expected that local authorities shall give such grants where necessary to allow really gifted children to pursue a course of higher education including possibly a university course The present limit to the opportunities for secondary and university education is set mainly by the inability to provide sufficient teachers and buildings to meet the enormously increased demand In order to expand these limits in the best and fairest manner extension of secondary school provision especially in the case of new schools should be undertaken with careful regard to the public elementary school attendance If new places are provided and new scholarships are awarded in reasoned proportion to the number of children in the elementary schools much of the existing unfairness in the distribution

of educational opportunity will be removed This view is supported by the fact that nearly two-thirds of the pupils in grant-receiving secondary schools are ex-elementary pupils of whom the majority pay fees An income-limit for the parents of those seeking free places is a just provision except where free secondary schools are concerned and should be applied whether the children come from public elementary or other schools where primary instruction is given So long as the vacancies in the secondary schools continue to be fewer than the number of qualified candidates for admission priority of admission should be granted according to educational ability irrespective of place of previous education One of the fundamental ideas underlying the new Act is the continuity of education from the age of 2 years to the end of life and it should be recognized that no school scholarship system can contribute its full effect to the improvement of the manhood and womanhood of the nation or to the efficiency of the nation's service to humanity unless it is supplemented by a liberal and well-planned provision of school leaving exhibitions tenable at universities or institutions for further education Further it is obvious that no care can be too great in selecting the best children and adolescents or in securing that the awards are appropriate to the probable best future development of the recipients

Principles of Award The methods used for selecting scholars are (1) by written examination (2) by oral examination or interview (3) by recommendation of teachers Some authorities require candidates to be medically inspected Twenty or more local authorities utilize the One day Examination conducted by the Minor Scholarships Committee of the Joint Scholarships Board About 3 000 candidates sit annually the compulsory subjects being arithmetic composition dictation etc while of optional subjects from 30 to 60 per cent of the candidates take drawing needlework history, and geography Syllabuses are published and the arrangement is an economical one for the smaller authorities who are thus able to utilize the services of experienced examiners The number of subjects and the standard required vary in different localities Several county authorities prefer an oral examination particularly for country children in some instances teachers assist either directly in the examination or by making reports In London a written examination of about 24 000 candidates is found to work satisfactorily an important feature in this award is the influence assigned to head teachers reports Considerations of expense and time make it difficult for most authorities to follow the ideal plan of combining written test and interview The head teachers reports particularly the order of merit of the candidates from their own schools, add considerably to the reliability of the awards

Conditions of Advantageous Extension. Further extension of the scholarship system in the secondary school should take two forms (1) Provision of scholarships to children from other than elementary schools (2) increase of scholarships granted to pupils already in the school These are mainly needed to prolong the school-life of the after pupils from 16 to 18 but a few of less value should be given at 14 The need for (1) is accentuated by the serious decline in many middle-class incomes resulting from the war, and the importance of prolonging school life amply justifies public expenditure on (2) The present system places a disproportionate share of taxation upon cultivated families with slender incomes without at the same time providing appropriate educational opportunities for such families Economic difficulties cause the withdrawal of many boys from secondary schools before completing their fifteenth year, notwithstanding the continued and right insistence by the Board of Education, and the united testimony of all qualified to speak, that secondary education implies the continuance of school life to the age of 16 or beyond During the three years 1910–1913 the average school life after the age of 12 of boys holding free places in grant-earning secondary schools, was three years three months In the same schools the fee-paying pupils only averaged two years six months and the figures for girls show a still more marked effect of the free place in prolonging the school life of the holder In the case of girls the majority of scholars are destined for the teaching profession a lop sided development of secondary education due to the administrative need of providing inducements to enter a profession which has offered insufficient social and pecuniary rewards

Scholarships have bridged the gulf between primary and secondary education and the opportunity thus given to many boys and girls will eventually have an important influence in sustaining the commercial and industrial efficiency of England, as well as in contributing to the nation's position in the realms of scientific and humanistic culture The justification of scholarships is the advantage to the nation, and it may be to humanity of giving the best opportunities to the most promising intellects In the future the British Empire will need largely to increase the supply of university-trained men and women and the prolongation of the school life of the ablest boys and girls until the age of 18 will be a gain to the pupil to the school, to the university and to the Empire G F D

SCHOPENHAUER, ARTHUR (1788–1860) — After a school classical education studied in various German universities under Fichte and Schleiermacher and graduated at Jena with his first work a philosophical treatise He then spent four years at Dresden (1814–1818) writing *The World as Will and Idea* (1819) in which he propounded his philosophy that the world is "through and through Will and secondarily through and through Idea" In this work he criticized Kant's theory of knowledge and taught that Will includes all processes from attraction to motivation, which he held was simply "causality seen from within" Schopenhauer's severe mistrustful and suspicious disposition is reflected in his works and he holds a place as the founder of systematic modern pessimism —though this is rather on account of the author's own applications of his theories to ethics, than because of his metaphysical speculations

SCIENCE AND ART MUSEUMS, SOUTH KENSINGTON —These Museums originated in 1852, in a collection exhibited at Marlborough House in connection with schools of art In 1857 the collection was removed to Kensington, and accommodated in temporary iron buildings until a permanent building was erected on the same site From 1853 the Museum has included objects of art lent by private owners In 1862 a special exhibition of objects of mediaeval and Renaissance art was held here, and from that time many of the

rarest and most valuable specimens of art workmanship in this country have been allowed by their owners to be seen and studied by the public Other objects have been acquired by purchase gifts, and bequests, and copies have been made of objects in other collections considered to be of general interest or of value to the art student The Museum covers about 12 acres of ground on the estate purchased by the Commissioners of the Exhibition of 1851 The buildings are chiefly of brick, ornamented with terra cotta and were designed by Captain Fowke R E In 1899 the Art section was named the Victoria and Albert Museum by Queen Victoria, who then laid the foundation stone of extensive buildings costing £800 000 The Museum is under the control of the Board of Education and contains nine departments Architecture and sculpture metalwork woodwork textiles, ceramics engraving illustration and design paintings a library and the Department of Circulation It is open daily free on Mondays Thursdays and Saturdays and at 6d or by ticket on other days which are students' days Admission to the library is by ticket to be obtained at the entrance The Science Museum is also under the control of the Board of Education and contains collections illustrating the principles of science and their application to industrial purposes There are four divisions (1) Scientific instruments and apparatus used in instruction and research (2) machinery including models and examples illustrating the development of branches of engineering and many other industries (3) naval models and marine engines with objects illustrating methods of ship propulsion (4) a science library containing books on science and a set of British patent specifications Admission is free except to the library There is a branch museum at Bethnal Green open free every day with a large collection of objects of science and art The Museum grants loans of selected objects to provincial museums schools of art and science and educational exhibitions Among the most notable gifts to the South Kensington Museum were the Sheepshanks Collection of Paintings and the Dyce and Forster Collections John Sheepshanks a wealthy Leeds cloth manufacturer and a generous art patron made a great collection of works of British artists especially those of Landseer Mulready and Leslie These he presented to the nation in 1856 and they were housed at South Kensington The Rev Alexander Dyce bequeathed in 1869 a library of 11 000 volumes besides oil paintings miniatures and engravings, and Mr John Forster the biographer of Charles Dickens bequeathed in 1876 18 000 volumes with many manuscripts paintings drawings and autographs

SCIENCE AND TECHNOLOGY, SOUTH KENSINGTON, IMPERIAL COLLEGE OF—(See IMPERIAL COLLEGE OF SCIENCE AND TECHNOLOGY SOUTH KENSINGTON THE)

SCIENCE, HUMANIST SPIRIT IN THE TEACHING OF—The coming age undoubtedly will for better or for worse witness striking developments of the natural sciences as subjects of the curriculum How shall the sciences be taught? What precepts shall the teacher inculcate? The answer to this question is of momentous import to English education No attempt obviously can here be made to elaborate a detailed course, only a few guiding principles will be indicated, which may be of service to those who ponder over present problems

The true educator guards against the tyranny of particular subjects He would if he could throw open the whole realm of knowledge, that the student might choose with full freedom those subjects which best can develop his individual aptitudes No one, of course can be universalized no one can bring within his ken the vast panorama of subjects that fall within the scope of higher education But he may realize however dimly that his own study is but one in a cluster of studies The natural sciences like all other sciences will take their places in the republic of learning

Science and the humanities comprise man's intellectual universe and the problem of their combination confronts us in many variations The humanities can be treated in a genuinely scientific manner as in the highly technical linguistic training of the older classical scholars Can and should science in its turn be humanized? The conception of a universe in which order reigns supreme the contemplation of the concatenation of cause and effect was even to Lucretius who could but dimly realize it a beatific vision and the spirit which animated that host of Victorian scientists of whom Darwin was only the greatest inspired Tennyson in some of his loftiest moments Yet it still is true that Science and the Humanities man s outer and inner world are things apart

The answer to our question can be sought by following two lines of inquiry We can it might seem turn science into a branch of the humanities perpetually moralize ever urge the highest ideals ever demonstrate the nobility of the scientist s vocation at its best But here we shall at once confront a band of scientists who will have none of these sentiments Science they will say with much reason simply observes generalizes and explains Morality except as a branch of anthropology interests them not religion except as a matter of origins and comparisons is a thing of naught The scientist achieves his greatness by keeping his emotional temperature low by refusing to gaze at things through the prism of the imagination by seeking the objective and distrusting the subjective There are no doubt such things as morality religion ideas of justice loyalty self sacrifice but the scientist *qud* scientist is not concerned with them

There is much force in this contention The scientist must be content to be accurate instead of eloquent, he must be sound at all costs he must train his pupils into thoroughness and hatred of the superficial There is a delight about the conception of all that is summed up in the phrase *Rerum Natura* but it is a conception which often appeals more to the literary man and can certainly be better expressed by him Again the problems which arise out of the results of science are rather matter for the apex of all science philosophy or as we may call it Ontology the science of real existences The scientist may be devout blameless of life nobly devoted to his studies enthusiastic in the service of his fellow men but he is not this as a scientist For the scientist has no partialities and no prejudices His aim is but to know and not to judge

If this be so what remedy remains? The scientist can be resolute in his opposition to the crudities of utilitarianism He can discourage in his students that taint of vulgarity which ever marks the utilitarian and which has often proved the gravest

hindrance to the advancement of knowledge But more must be done The educator cannot rest satisfied with this Literature must form a real part of the curriculum of those who hope to find their highest development in science Side by side the humanities and the sciences must flourish together We must try to correlate our subjects aiming at something like a mental balance

J H E C

SCOLOPIANS.—(See PIARISTS)

SCOTLAND, CENTRAL INSTITUTIONS OF.—One of the outstanding results of the Education (Scotland) Act 1908 was the centralization of education Thus intermediate and secondary schools were established at various centres and facilities provided to enable children from primary schools to attend Similarly school boards were encouraged to establish continuation classes all over Scotland for technical and other specialized instruction and the higher stages were left to the highly equipped central institutions scholarships and other facilities being provided for students from continuation classes and from intermediate and secondary schools There is considerable diversity in their administration as old-established colleges were usually chosen but they have generally a separate governing body containing representatives from the town council the Education Authority the university and local associations Generally also they have advisory committees representing the various trades and professions for which classes are provided

In many cases there are substantial endowments and under the Education (Scotland) Act 1918 payments may be made by the Education Authority grants for capital expenditure may be received locally and from the Scottish Education Department about one sixth of the maintenance expenditure is obtained from fees and about one-half from the Department out of annual Parliamentary grants and the Education Fund ' The 1901 Continuation Class Code exempted central institutions from its operations and introduced more elastic conditions of grant

The following are central Institutions—

Aberdeen—
Robert Gordon s Technical College
*Aberdeen and North of Scotland College of Agriculture

Dundee—
Technical College and School of Art

Dunfermline—
*College of Hygiene and Physical Training

Edinburgh—
College of Art
College of Agriculture
Heriot Watt College (for Technical and Commercial Courses)
*Royal Dick Veterinary College
School of Cookery and Domestic Economy

Glasgow—
Glasgow and West of Scotland Commercial College
College of Domestic Science
Royal Technical College (Technical and Nautical)
School of Art
*Veterinary College
West of Scotland Agricultural College

Leith—
Nautical College

Day classes are held in all these centres, and evening classes in those not marked * The qualification for admission varies but generally there is a preliminary examination about the standard of the full Leaving Certificate of the Department for the Day classes and of the Intermediate Certificate for the Evening classes Students also qualify for admission to evening classes by attendance at an affiliated continuation class and promising evening students are encouraged to pass on to the Day Diploma classes

The diploma of a central institution is a recognized qualification for a technical teacher and in many cases a Central Institution Evening Group Certificate is sufficient for a teacher in that group

Relations with the Universities The four Scottish universities have co-ordination with certain of the day classes Thus in Glasgow all the classes necessary for the degree of Bachelor of Science in Engineering may be taken in the Royal Technical College in Edinburgh some classes for this degree must be taken at the Heriot Watt College St Andrews University recognizes classes taken at Dundee Technical College as part of their curriculum and Aberdeen University has a similar arrangement with Robert Gordon's Technical College The agricultural and veterinary colleges have also working arrangements with the universities

The classes in applied science and art in some of these older institutions were the forerunners of technical education in Scotland and it is possible that in the future development of industries in Scotland the central institutions will find a new sphere of usefulness co-operating with the employers and education authorities of the district in the provision of advanced day continuation classes for the ordinary shop trained apprentice and in the organization of post graduate research courses for university trained men and women under the guidance of special technical committees or invention boards

J H M

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SCOTLAND, THE CLASSICAL ASSOCIATION OF.—Was founded in 1902 and intended for the promotion of classical studies in the schools and universities of the country Its membership has been on an average 320 and while consisting mainly of teachers actively engaged in classical work in the schools it has also embraced numerous university professors and lecturers and a large proportion of distinguished public men interested in classical work A volume of ' Proceedings ' was published annually till the outbreak of war and will be continued from the present year on The Presidents of the Club have been Professor Ramsay Professor Harrower, Dr Heard and Professor Burnet, and the Secretary is Mr G T Pringle M A , Hutchesons Grammar School, Glasgow The subscription is 15s

SCOTLAND, ELEMENTARY EDUCATION IN.—Before 1870, Scotland was the only part of the

British Isles that possessed anything in the nature of a national system of education Years before the Reformation grammar schools in which Latin was taught were to be found in all the principal towns and each town also had a "lecture-school" in which children were instructed to read the Scots tongue In 1496 a statute was passed ordaining "that all barons and freeholders that are of substance put their eldest sons and heirs to schools from the age of six or nine and to remain at the grammar schools until they were competently founded and have perfect Latin' Thereafter they were to remain three years at the schools of art and law so that they might have knowledge of law This seems to be the beginning of compulsory education in Scotland but there is nothing here to indicate that the other classes of the nation were receiving attention with regard to education A fine of £20 a large sum in those days was imposed on those who failed to fulfil their obligations in this matter These schools were under the direction of the Church and in most cases closely associated with the monasteries and other religious institutions But it was to John Knox that Scotland was indebted for the plan by which a school should be established in every parish In the *First Book of Policy* published in 1560 a scheme was laid down for education in all its grades—primary secondary and university In every town of importance a schoolmaster able to teach grammar and Latin was to be appointed In the upland' or country districts a reader or minister was to instruct the children and youth of the parish in their rudiments and especially in the Catechism or elements of religion while in every notable town there was to be established a college in which at least logic and rhetoric together with the tongues were to be taught The whole history of Scottish education is to be found in the endeavour to make this system as complete as possible The Reform Church had then neither the money to carry out this enlightened policy nor the influence of the State behind it In 1633 however the establishment of parish schools was effected by Parliament ratifying a decree which had been passed in 1616 for that purpose To the bishop with the consent of the freeholders of the district was given the power of imposing a local assessment for education —the second great step in the history of Scottish education and one which has persisted to this day

Parish Schools The great charter of Scottish education is the Act of 1696 which under the title of "An Act for Settling of Schools ordained that in every parish 'there be a school settled and established by advice of the heritors and minister of the parish By this Act parish schools were set up and the system was intended to cover the whole of Scotland and to be sufficient for the education of the whole people In the reign of George III side schools were established and in 1838 a statute was passed to found and endow additional schools These were known as Parliamentary parish schools and did not attain to the rank of full parish schools It will thus be seen that the parish schools were the distinguishing feature of the Scottish system of education Their function was to give education to all the pupils in the parish area irrespective of their rank in life The instruction given was chiefly elementary but pupils were selected by the teachers to go on to higher work The general diffusion of education among the people of Scotland was largely attributable to the fact that there was one public school in every parish created by statute, open to all and supported by taxation

The School Boards By the Act of 1872 the powers and duties in the matter of education which had up to that time been vested in the heritors and ministers of the parishes were handed over to School Boards elected by the ratepayers This Act was designed to provide education for every child of school age in Scotland It was expressly stipulated that the standard of education then prevailing was not to be lowered as a consequence the schools established at that time gave instruction not only in the elementary subjects of reading writing and arithmetic but also in a number of secondary subjects The line of partition between the primary and secondary schools of Scotland had always been a very narrow one and the Act of 1872 recognized this fact In 1898 fees were abolished for pupils between the ages of 3 and 15 though power was still given to School Boards to maintain a certain number of fee paying schools in which fees were to be charged to infants and in all or any of the classes By the Act of 1901 it was declared to be the duty of every parent to provide efficient elementary education for his children who were between 5 and 14 years of age The word elementary was dropped in the Act of 1908 and the Scottish Education Department in its classification of schools in Scotland points out that of designations at present in use the term elementary as defined in the English Education Act of 1870 is not strictly applicable to any school in Scotland The Department defines a primary school as "a school or department of a school giving an education based entirely upon English to pupils who are as a rule below the age of fourteen A primary school may contain certain individual pupils or small sections of scholars who are being instructed on the lines of an intermediate school

Administration and Organization Before the passing of the Education (Scotland) Act of 1918 there were in Scotland 952 school boards in charge of the administration of education in addition to these there were a number of school managers responsible for the voluntary schools which were mostly Episcopalian or Roman Catholic But this Act makes considerable changes with regard to administration and organization The school board system has been abolished and in its place there have been created education authorities elected *ad hoc* on the method of proportional representation There are thirty eight education authorities the parish as an administrative unit having been replaced by the county unit together with the burghs of Edinburgh Glasgow Aberdeen Dundee and Leith Local co operation is secured by the appointment of school management committees consisting of members of the authorities parents and teachers It is the duty of the education authorities to prepare and submit for the approval of the Scottish Education Department a scheme for the adequate provision throughout the education area of the authority of all forms of primary intermediate and secondary education By the Act the age for leaving school has been raised from 14 to 15 but as yet (1920) this section of the Act has not come into force Grants are now to be paid not on individual pupils or subjects but by a block grant of (say) 50 per cent of the approved expenditure All voluntary schools within two years from the passing of the Act may be transferred to the education authorities who have in respect thereof

the sole power of management including the right to appoint and dismiss teachers and to direct the curriculum of these schools No exemption from school attendance may be granted to a child under 13 years of age The normal organization of a primary school is (1) the Infant Division providing instruction suitable for children under 7 (2) the Junior Division giving instruction suitable for pupils between the ages of 7 and 10 (3) the Senior Division with instruction suitable for children between the ages of 10 and 12 and (4) the Supplementary Department for pupils over 12 who have passed the Qualifying Examination Liberty of classification irrespective of age is however allowed The system of co-education is almost universal though at one time a strong opinion was expressed in favour of separating the boys from the girls after they had emerged from childhood and teaching them in different rooms under different teachers

The curriculum in all cases and for all divisions includes reading writing and arithmetic and provision must be made for physical exercises needle work (for girls) singing by note drawing (with or without manual occupations) and committing to memory of pieces of poetry of literary merit In addition to these provision must be made in the Junior Division for nature study practice in speaking English (oral composition) and geography The curriculum in the Senior Division comprises also history

The Supplementary Courses The highest division of the primary school is the Supplementary Department for pupils over the age of 12 But in order to be enrolled in this division a pupil is required to pass an examination called the Qualifying Examination which guarantees a certain standard of elementary education The Qualifying Examination is the crown of the primary school and is of such a character that it may be passed by a pupil of 12 years of age of normal attainments The subjects of this examination are reading writing arithmetic and the ordinary subjects of the Senior Division viz geography history and nature study Besides being the passport to the Supplementary Department of the primary school this examination is also the preliminary qualification for admission to the intermediate or secondary school

The Supplementary Courses are really designed for pupils between the ages of 12 and 14 "who having reached a well defined stage of general education will not enter upon the study of specifically secondary subjects' They are to some extent vocational in character and have a bearing on the probable practical requirements of the pupils' after-school life These courses provide for the continuation and development of previous studies and are of four kinds—the Commercial Course the Industrial Course the Household Management Course and the Rural Course The curricula of the courses are specially intended to meet the varying needs of the pupils Some subjects of instruction are common to all the courses viz English and certain studies that bear upon matters which it is important that all pupils should know whatever their occupations in after school life are to be These latter include the laws of health thrift investment insurance, the conditions of trade and employment the institutions of Government the Empire—its history, growth and trade, nature study physical training and singing In the Commercial Course the subjects to be studied are arithmetic (commercial) book-keeping common commercial documents and shorthand (optional) In the Industrial Course the curriculum consists of geometry and mensuration applied arithmetic woodwork or ironwork and mechanics In the Household Management (Girls) Course there are housekeeping (including housewifery marketing cookery laundry work and needlework) arithmetic scale drawing, and dressmaking The Rural Course provides for instruction in nature study geometry newspaper market reports keeping of accounts and woodwork or ironwork (optional) In rural schools the scheme may provide for the instruction of selected pupils in one or more languages in addition to, or in substitution for subjects of the supplementary course a concession which shows once again that the line of demarcation between the primary and the secondary school is neither broad nor right R D

SCOTLAND, THE EDUCATIONAL INSTITUTE OF—The Educational Institute of Scotland was formed at a meeting of teachers held in Edinburgh on the 18th September, 1847 and claims to be the first really national association of teachers It was instituted "for the purpose of promoting sound learning of advancing the interests of education in Scotland and of supplying a defect in the educational arrangements of that country, by providing for the periodical session of a Board of Examiners competent to ascertain and certify the qualifications of persons engaged or desiring to be engaged, in the education of youth in Scotland, and thereby furnishing to the public and others a guarantee of the acquirements and fitness of teachers for the duties required of them and thus securing their efficiency and raising the standard of education in general' On 18th May 1851, the Educational Institute of Scotland which had then a membership of 1 800 was granted a Royal Charter of Incorporation giving it the power to use its own common seal It was further empowered to purchase hold and dispose of heritable property as an institute to appoint a Board of Examiners for the purpose of regulating and conducting examinations to divide its members into local associations, and to grant diplomas or certificates There are three grades of membership, namely, Members, Associates and Fellows The grades of Member and Associate are open to all teachers engaged in schools in Scotland who have been recommended by a local association to the Board of Examiners, and whom the Board may deem worthy The degree of Fellow (F L I S) may be conferred on Members or Associates who have attained eminence as public teachers during a period of not less than twenty years, and have rendered valuable service to the Educational Institute during a period of not less than fifteen years The degree may also be conferred on educationists who have attained eminence as writers on educational subjects, or have rendered signal service to education or to the Educational Institute and on distinguished teachers not belonging to Scotland who possess high attainments in, *e g* Literature, Philosophy, Pedagogy, History Science Art especially as applied to education have had twenty years of highly successful experience in public teaching and have been active members for twenty years of an association of teachers similar to the Educational Institute (in cases where such membership is possible) All Fellows have the right to wear a gown and hood The Educational Institute has also conferred the

degree of Hon Fellow on a number of public men who have done eminent service in the cause of education but the number of Hon Fellows is strictly limited The Institute comprises the whole of Scotland and is divided into sixty-one local associations The annual business meeting in accordance with the Royal Charter is held in Edinburgh in September, and is composed of delegates chosen in the proportion of one for every fifty members The membership is over 21 000 representative of all grades of teachers—primary secondary, and university R D

SCOTLAND, TEACHERS IN —The qualifications conditions of service and salaries of teachers in Scotland are very similar to those of teachers in England Three points call for special mention viz the provision for endorsement of the teacher s certificate as he improves his qualifications the fact that teachers engaged in any work above the primary standard must have special qualifications and the fact that Scotland has not gone as far as England in reducing the size of classes in elementary schools

The Committee of Council on Education in Scotland recognizes the fact that certificated teachers may need to add to their qualifications by further training and the provincial committees established in connection with the universities and entrusted with the task of providing for the training of teachers, undertake the establishment of classes for the benefit of certificated teachers who desire to improve their qualifications

In the Scottish scale a head teacher may count for fifty children a certificated class teacher for sixty children and an uncertificated teacher for forty-five children in average attendance whereas in the English scale a head teacher may count for thirty five children and a certificated class teacher for sixty an uncertificated teacher for thirty-five children in average attendance

The difference between teachers in England and in Scotland is probably decreasing steadily as the value of education comes to be better recognized by the public Scotland has accorded teachers the support of public opinion for many years Some parts of England are not worse than Scotland in that respect but other parts have yet to learn how valuable is a good educational service

The functions of the various types of teachers are precisely similar to those of the corresponding types in England and salaries are very nearly equivalent as they must necessarily be in view of the fact that the Scottish Education Department and the English Board of Education mutually recognize the certificates issued by either

A C C

SCOTTISH HISTORY, THE TEACHING OF — The real interest of history, at all events for the young, is to be found in its details and the great problem of historical teaching in schools, as it seems to me, lies in the difficulty of fitting into the framework of a general exposition sufficient detail to arrest the attention and stimulate the curiosity of the student Simple detail, without some such framework, is scarcely to be distinguished from gossip, and gossip is not converted into an intellectual discipline by mere antiquity The picturesque method of writing history has been debased by the production of numerous books which encourage in the adult mind that "habit of reading" which Professor York Powell used to denounce as no better than the "habit of snuffing" The danger that besets the picturesque teaching of history in schools is the similar danger of degeneration into harmless chatter—that Cromwell had a wart on his face, that Queen Anne had a large number of children, that Queen Victoria appeared on a famous occasion in a nightgown, and so forth Every examiner knows how the mind of a child seizes on such things and is satisfied with them, half the irrelevance of examination papers may be ascribed to this cause alone The moral is not to avoid detail, but to take precautions against its abuse

The danger is specially applicable to the teaching of the history of Scotland Romantic detail abounds and has a great and important place in our national story For very young children it is the natural and proper introduction to the subject, and its significance rather increases than diminishes as knowledge advances—but only as knowledge advances The details are meaningless except as part of the picture Therefore put aside at once any attempt to make the study of Scottish history a pursuit comparable to the reading of novels or books of adventure There are, fortunately adventures in history but they are not for the beginner It is hard work to master a narrative, and for the young student history is first of all a narrative Glib phrases about movements and tendencies about the conflict of ideals about the inner meaning of events are often regarded by the student as a valuable equipment for the examination room I do not say that such topics cannot be usefully discussed in a schoolroom but I am strongly inclined to suspect that they demand both an exceptional teacher and an exceptional student, as a rule they are not understood or at the best they tend rather to satisfy than to stimulate inquiry and produce a naïf and arbitrary handling of profound questions which is far removed from education

History as a Narrative The conception of history as a narrative to be mastered does not and should not mean insistence upon mere lists of dates and summaries of facts The study of narrative necessarily makes a serious demand upon the memory, but it implies other things as well—in the first place a selection of facts It is indeed this training in selection that gives to history no small part of its value as a training for active life in which we are constantly called upon to make such a selection Everything that is to be found in the text books everything that is explained in class has not an equal value and it is a great part of historical training to learn why the values vary Bannockburn was a great triumph Flodden a great disaster but Flodden does not balance Bannockburn The execution of Queen Mary is scarcely more than a topic for her biographer and for the biographer of Elizabeth the execution of Charles I is a grave subject for the historian Many more Macdonalds perished in the cave in the island of Eigg at the end of the sixteenth century than in Glencoe a hundred years later, yet the second is far the more important of the two massacres To understand that these things are so, to discover why they are so and to apply similar tests to other circumstances, is no mere memory task

Closely related to the selection of facts is the consideration of cause and effect Discussions of this kind may, of course, be very easily influenced

by prejudice, and it is hard to avoid treating as statements of fact very disputable theories But, on the other hand, there are many clear instances in which the explanation is part of the narrative, as, for example (to take a familiar instance outside Scottish history) the effect of maritime discoveries on the fortunes of the Republic of Venice This is perhaps, the best illustration in the whole range of Modern History, but there are many significant and scarcely disputable, things to be said even about such controversial topics as the origins of the War of Independence, the results of the French Alliance the influence of the Reformation on foreign policy, the effect of the Union of the Crowns upon the position of the monarchy the causes which led to the Union of the Kingdoms and the rise of the Jacobite Party In all these instances, a large part of the explanation is a simple statement of fact Some general warning may be required that *post hoc* is not always equivalent to *propter hoc* and that historical events of far reaching importance can very rarely be ascribed to a single cause—not always even to one predominant cause The teacher will call attention to the connection between events and the student will learn to look for such connections and thus in a manner, construct his own narrative Such constructive work both stimulates the intellect and reduces the strain on the memory

The Selection of Epochs for Emphasis A clear statement of narrative studied in some such way must be the foundation of the teaching of Scottish history It is obvious that such a narrative cannot be studied with the same care at all points and it is essential that the teacher should make a deliberate choice of the epochs to which special attention is to be paid Except in the vicinity of Roman remains I should myself treat very lightly the Roman occupation and the early history of the country All that is definitely known about the Roman invasions, the Scottish conquest of Dalriada the settlement of the Lothians the repulse of the great Northumbrian invasion the raids of the Danes and Norsemen the union of Picts and Scots the annexation of Lothian and the union of Strathclyde with Pictland and Scotland can be stated very briefly, and brevity in this instance is the soul of clearness Everything beyond a simple statement is controversy and controversy of an obscure and difficult kind The names worth remembering are very few—Agricola Hadrian Antoninus Pius Severus Nectansmere Angus MacFergus Kenneth MacAlpin, Constantine III Carham Duncan Except where there is local interest to which an appeal can be made the wisest plan is to treat this early history as the axioms and postulates of what is to follow Two topics may be treated with more detail In the first place the introduction of Christianity the life of St Columba, the missions of his disciples and the early ecclesiastical relations with England give scope for more thorough discussion, and, in the second place the story of Macbeth affords an opportunity of bringing history into contact with literature From the accession of Malcolm Canmore to the end of the reign of David I a much fuller treatment is desirable, for the work of St Margaret and her sons changed the whole aspect of Lowland Scotland and from this period emerges the Scottish nation as we know it historically The ecclesiastical and the economic aspects of the story are not less important than the political history

There are a few obvious points which should be insisted upon in the reigns of Malcolm IV, William the Lion, and the two Alexanders, but pressure of time will hurry the teacher on to the great topic of the War of Independence About this, there are three things often neglected, to which I should like to draw attention—the peaceful relations with England before the attack upon the liberties of the country by Edward I the remarkable recovery after the disaster of Falkirk, and the perilous position in the early years of David II I should regard the re capture of the territory ceded by Edward Balliol to Edward III of England as the end of the War of Independence and the battle of Neville s Cross as beginning a new era of almost constant war with England not for independence (which was not in danger), but for the French alliance and to regain the lands lost after Neville's Cross This era ends with the recovery of Roxburgh in 1460 and I should not be inclined to devote much attention to these 120 years The romantic stories of the reigns of Robert II and Robert III—the Otterburn ballads and the tales told by Sir Walter Scott in the *Fair Maid of Perth*—lighten the narrative Hailaw the tragedies of James I and of the House of Douglas, and the Scottish intervention in France bring us to the death of James II Too little is known of the reign of James III to make it possible to devote much attention to it but the reign of James IV should be carefully studied alike for its political importance, for the growth of Scottish trade and for the rise of a short lived Scottish naval power I suggest by way of illustration, the choice which I personally should make other selections would be equally good and the teacher should choose topics in which he is specially interested From the time of the Reformation it is a question of selecting aspects of the story rather than periods and to enter into any discussion of these would take us too far afield

The Study of Topics in Detail I turn to the other side of the problem—the study of special topics in sufficient detail to make them interesting and stimulating The selection of topics ought, I think, to be made primarily with regard to locality, for local history is the best illustration of national history There are several regions in Scotland in which it is possible to show the influence of geography upon history, and in such regions special attention might well be directed to this subject, the importance of which it is very hard to realize from maps and plans Every school within sixty miles of Stirling should have a history lesson from the battlements of Stirling Castle I may perhaps be allowed to put in a *caveat* in this connection Great as is the influence of geography upon history, it is necessary to protest against the tendency to treat it as the determining factor, or to regard history as the record of the effect upon mankind of a series of conditions of which geography is the most important History is the history of man, and of the ways in which man has employed the conditions in which he finds himself, geography among the rest The earlier history of Scotland is a continual protest against geography for geographical considerations " mark out Britain for the seat of a single nation " and if the island was to be divided the natural line of division is the short line joining the Firths of Forth and Clyde The history of Scotland up to the beginning of the eighteenth century is the story of why neither of these things happened

Local History If the district possesses Roman remains, or vestiges of prehistoric civilization special attention should be paid to these subjects as also to any period in which the locality was the scene of any famous event In the districts near Stirling, Edinburgh or Perth, or on the Border, the difficulty will be to select from the many possibilities of this kind At first sight, it would seem as if the concentration of great events within a comparatively narrow area would unduly diminish the opportunity of the teacher in less favoured regions but there are many historical mansions Our earlier history is largely connected with the Highlands and the Highlands have many links with the campaigns of Montrose and with the Jacobite movement The South west has its Covenanters There are few regions in which it is not possible to trace the history of the War of Independence or of the Reformation Any town will provide openings for commercial and burghal history, any barony will illustrate the place of the baron the tenants and the peasants in the life of Scotland up to the end of the eighteenth century Social history has no areas in which interest is concentrated and nothing makes even the most elementary historical study so real and so convincing as the connection between the places we know and the wider region of which they form part An annual prize given for an essay on some subject of local history will do more to stimulate the boys and girls whose tastes possibly unknown to themselves lie in the direction of historical studies than a hundred text books or a thousand examinations The neighbourhood of a castle or peel of an ancient church or the ruins of a monastery may be a great asset in teaching

Help from Novels, Poems, and Biographies Apart from the suggestions afforded by local situations there are various ways of stimulating interest Ballads may be used with great effect to illustrate Scottish history and a very wide use may be made of the writings of Sir Walter Scott I know that the younger generation are impatient of Scott's leisurely introductions if they are let them "skip' Scott himself was a convinced defender of the habit of "skipping" Let them read the novels or the poems for the story alone the stories are good stories and they will like them If nothing but abbreviated editions will do then (reluctantly) let them have abbreviated editions From the War of Independence to the 'Forty five and beyond it, the novels the poems and the Border Minstrelsy are an invaluable aid to the teacher What the Reformation meant to the men who lived through it can best be understood from *The Monastery* Queen Mary lives in *The Abbot* and King Jamie in *The Fortunes of Nigel Marmion* in the words of Lockhart paints the capital the court the camp the heroic old chieftains of Scotland in colours instinct with a fervour that can never die and dignifies the most fatal of her national misfortunes by a celebration as loftily pathetic as ever blended pride with sorrow" I am not suggesting a study of the text of novels or poems and I do not care even about just criticisms of their accuracy They tell the story as it appeared to a very great man who knew it and loved it and understood it They will breathe upon the dry bones of the text-books and make them live

Another method of securing the interest of detail is the biographical study of a period This method is scarcely practicable until you reach the sixteenth century, because so little personal knowledge is available A life of Wallace or of Robert the Bruce is only another name for a history of the War of Independence But the life and the personality of John Knox of Queen Mary, of Andrew Melville of Argyll, and of Montrose are known to us the detail is interesting and illuminating, and the biography vivifies its historical setting

The biographical method like the other methods to which I have referred makes a considerable demand upon the teacher He must find the arresting and convincing passages in Knox s letters or Bannatyne s memories of his master, in the enormous mass of material about Queen Mary or in James Melville s *Diary* just as he must select the ballads or make himself acquainted with the history of the district and with the aspects of general history best illustrated by the locality He will find his reward not only in the pleasure of original inquiry but also in an added freshness in his teaching There are various ways of preparing himself for his task We have as yet no good bibliography of Scottish history but works on local history are easily accessible locally If a castle or a monastery is the chief point of local interest reference to the series of volumes on the ecclesiastical architecture and the castellated architecture of Scotland will be of great assistance and the teacher will find useful Mr Barnard's *Companion to English History* The notes in Mr Lang s *History of Scotland* and the references in the *Dictionary of National Biography* will put him on the track of many interesting things For use in the schoolroom there are available the four volumes of *Scottish History from Contemporary Sources* and an excellent series of *Scottish History Source Books* is in course of publication The various county geographies will be found invaluable and there is a very good *Historical Geography of Scotland* by Mr W R Kermack Every school should possess Bartholomew s large *Survey Atlas of Scotland*

For the teacher s own general reading I should recommend in addition to such books as those of Professor Hume Brown Mr Lang Mr Mathieson and Mr Hay Fleming some of the writings of Cosmo Innes especially *Scotland in the Middle Ages* and *Sketches of Early Scotch History* The Prefaces to the volumes of the *Exchequer Rolls* and the *Treasurer s Accounts* abound in just the kind of information not elsewhere accessible which will enliven class teaching our only history of the Scottish Navy is in Sir James Balfour Paul's Prefaces to the *Treasurer s Accounts* and all the volumes add to our knowledge of mediaeval life in Scotland Best of all perhaps is the study of contemporary diaries autobiographies and letters The teacher who is familiar with Baillie s *Letters and Journals* will find the history of the seventeenth century much more intelligible and capable of being communicated much more easily than modern works can make it R S R

SCOTTISH STUDENTS IN FOREIGN UNIVERSITIES AND FOREIGN STUDENTS IN SCOTTISH UNIVERSITIES —Before the foundation of the University of St Andrews (1410–1413) Scotsmen in quest of higher learning journeyed to Oxford, or crossed the sea to a university city and notably to Paris By the erection in the fifteenth century of the universities of St Andrews Glasgow and Aberdeen education was advanced but graduates

who would continue their study of canon law with a view to Church preferment, passed to foreign schools Persecution when the Reformation was nigh, drove not a few of the younger clergy to universities where freedom could be found When the Reformation had come Scotsmen could return, and among them was George Buchanan who had taken a degree in St Andrews and studied and taught in France He was appointed Principal of St Leonard s College St Andrews but the unsettled state of the country under Mary Stuart did not entice foreigners to the lectures of the great Latinist Andrew Melville after years spent in Paris Poitiers and Geneva was taken to Glasgow as Principal Though students flocked to him from all parts of the country foreigners were not tempted to Scotland Scottish students on the other hand had no need to travel to Germany or France In the later Covenanting times however when the universities were under episcopal control the youth destined for the ministry of the Presbyterian Church found his way to Holland

An important advance in scientific education was made when in the eighteenth century a medical school was established in Edinburgh University Scotsmen no longer required to go abroad for a medical degree and the foreigner might be seen in Edinburgh The other Scottish universities followed Edinburgh in providing medical education though hardly entering into competition with it and for a time its only serious rivals were Paris and Vienna Yet foreigners did study for the Edinburgh degree and Scotsmen continued to go for special courses to the medical schools in France Germany and Austria Special courses are still taken and in recent times the clinics at Paris Berlin Heidelberg, Munich and Vienna have been most frequented

Interchange of Graduates in Modern Times A three term session for students of medicine science and arts has been established in the Scottish universities but as the divinity classes meet only in the two winter terms the students have opportunity to spend their summers abroad For more than one generation Scottish students of divinity in large numbers have entered German universities generally remaining only for the summer term It has not been the custom for the German student of theology to enrol in a Scottish university and the fact that the professors of divinity do not teach in summer may afford an explanation Within the last few years however young men though in small numbers from continental evangelical churches were admitted to the Scottish divinity halls after completing their courses in their own schools Bursaries were assigned to them but, as these are not likely to be available in the future it is improbable that the licentiates of the evangelical churches will continue to come to the Scottish universities

From the days of Hegel students of philosophy found their way to Germany and eventually it became the custom for young metaphysicians to enter German classrooms and psychologists to work in German laboratories Degrees in education however are being instituted by more than one of the Scottish universities and the student of experimental psychology will not require in the future for the purposes represented by the degree in education to go beyond his own country For many years, the chemical laboratories of Germany (especially those of Berlin Heidelberg Bonn and Leipzig) drew young scientists, who very often remained to take a degree Yet there were very plain indications that Germany was not continuing to exercise the strongest attractive influence, and students of science, as well as of philosophy, were finding their way to France Professors in Paris were showing that they were more than mere lecturers with the charm of style and were thinkers and workers also Bergson in philosophical circles is now discussed more than any other man and students have been crowding his lecture-room The reputation of Paris with its schools of philosophy science and medicine was higher than, or as high as that of Berlin before the war in coming years no merely new fashion will direct the student to the country now so closely allied with Britain

Vacation courses for short studies have been organized in Neuchâtel and other towns and in Edinburgh in recent years there have been such courses In France wherever vacation classes have been opened there has been a *Comité de Patronage des Étudiants Étrangers* as in Germany a *Verkehrs verein* to supply information to strangers The Students Representative Councils of the Universities of Great Britain and Ireland issue a guide, under the title of *A Handbook of Foreign Study* which gives advice to travellers and furnishes details regarding the classes in the chief universities which students have been accustomed to visit The next edition of the handbook will no doubt receive a drastic revision J HERKLESS

SCRIPTORIUM —(See LIBRARIES MEDIAEVAL)

SCRIPTURE IN SCHOOLS —(See BIBLICAL INSTRUCTION IN SCHOOLS)

SECONDARY EDUCATION IN ENGLAND, PROGRESS AND DEVELOPMENT OF —During most of the nineteenth century the very term secondary education was unknown in England and such intermediate education as existed was provided by public endowment or by private initiative There was no central or local authority to supervise the quality or the quantity of this type of education and it was only gradually that the State after inquiring into the financial conditions of the various endowments was inevitably compelled to investigate also the educational side of the problem

The first of these inquiries was that of Lord Brougham s Commission (appointed in 1818) which took up in 1819 the whole question of charitable endowments only concluding its labours in 1837 Its report ultimately led in 1854 to the creation of the Charity Commission whose powers were further enlarged in 1860 In 1861 a Royal Commission under Lord Clarendon inquired into the conditions of the nine leading public schools Eton Winchester Westminster Charterhouse St Paul's Merchant Taylors Harrow Rugby and Shrewsbury It revealed many defects The curricula were too exclusively classical history and geography were neglected while natural science was practically untaught At Eton mathematics was only compulsory after 1851 and French was still voluntary in 1862

The Taunton Commission (1864–1867) made a thorough survey of the province and provision of intermediate education and revealed the nakedness of the land Matthew Arnold was an assistant member of the Commission and it was on this occasion he put forth his celebrated plea for organizing English secondary education The report of

the Commission disclosed a widespread abuse of educational endowments It criticized the antiquated nature and inelasticity of the curriculum of many schools the inefficiency of governing bodies, and the evil results of freehold tenure for head masters while it revealed the totally inadequate provision for girls education The Commissioners only came across twelve endowed schools for girls It recommended the creation of a central authority with a consultative committee, the establishment of local authorities, taking the county or province for the administrative unit a system of examination and inspection to be also open to private schools and rate aid for buildings and scholarships Unfortunately the time was not yet ripe for these reforms.

Still the labours of the Commission led to the passing of the important Endowed Schools Act (1867) by which special Commissioners were appointed for remodelling educational endowments In 1874 their functions were transferred to the Charity Commission but the work went on as before Much also was done by the Commissioners for girls' secondary education while the revelations by the Taunton Commission of the deficiency of educational facilities for girls led to a great outburst of private initiative In the ten years following the report forty five new schools were opened and the work of founding new schools was carried forward by the Girls Public Day School Company (*q v*) established in 1877

The educational reforms of 1870 momentarily diverted public attention from secondary education but the establishment of universal and compulsory elementary education was bound in the long run to bring up the whole question of an adequate supply of intermediate education since it is clear that some form of continuative education beyond the standard of simple primary education must be provided for the cleverer children of the masses while foreign competition and an awakening sense of the value of education was bound to make a similar need felt among the middle and lower middle classes for whom so little had hitherto been done by the State

The Higher Grade School was the inevitable outcome of the need of providing some "capacity catching machine" for the cleverer children of the masses At first the growth of such schools was slow but they rapidly increased after 1888 when the Science and Art Department (founded in 1853) began to make substantial grants towards the teaching of science in these schools As they were giving at least in their upper classes what was practically a secondary education it was evident that sooner or later the cry of overlapping would be raised by the smaller grammar schools and other secondary schools

Up to the passing of the Technical Instruction Acts in 1889 and 1891 these schools had only their endowments and fees to draw on But with the entry on the scene of a new local authority (the county or borough or urban district council) the struggle became more equal In addition to the right to levy a penny rate for technical education these local authorities received in 1890 a substantial windfall from the central exchequer in the so-called "whisky money" which they might if they liked devote to technical education A comparatively brief experience of the futility of trying to build up technical instruction without providing a sound basis of general education speedily convinced these authorities of the need of spending a good deal of their funds on subsidizing local grammar and other secondary schools Thanks to the benevolent interpretation of the Acts by South Kensington practically all subjects could be recognized and subsidized as technical except Latin and Greek

A return in 1892 of the endowments available for secondary education stated that apart from the value of sites and buildings the total income was estimated at £677 132 These were possessed by 1 262 endowments or nearly double the number investigated by the Taunton Commission

The Bryce Commission The emergence of rival local authorities and the growing recognition of the need of some co-ordinating local authority together with the apparent overlapping between school and school in some districts and the absence of any secondary accommodation in others made it increasingly clear that a general survey was necessary of the whole field of education lying between the elementary school and the university, but excluding the more technical side of the problem The moment for a general "stock taking" of secondary education had clearly arrived and in 1894 the usual English expedient was adopted the appointment of a Royal Commission which not only had the advantage of having for its chairman the Right Hon J Bryce one of the Taunton Commissioners but also three lady members the first to act on a Royal Commission They presented in 1895 a thoroughgoing report It recommended a unification of the central authorities by an amalgamation of the Education Department the Science and Art Department and that section of the Charity Commission dealing with educational endowments with a responsible Minister for Education assisted by a consultative committee of educational experts Proposing the county as the local unit for the administration of secondary education it recommended the appointment of a committee of the county councils with co-opted members These local authorities were to be responsible for the supervision and supply of secondary education within their area It also advised the creation of a teachers register with a view of promoting professional efficiency and for paving the way for a system of school registration In 1896 an attempt was made in Parliament to settle the problem of the local organization of secondary education but the Bill broke down owing to the jealousy displayed by the smaller local authorities towards the larger ones

The far easier problem of the consolidation of the existing central authorities in a single body was solved by the Board of Education Act of 1899 which replaced the President of the Council by a president of the new board and carried out the suggested amalgamation of the three authorities The Act also provided for the creation of a Consultative Committee to advise the board and to frame a register of teachers At first the board was divided into two sections elementary and non elementary Since 1903 however the latter section has been re-divided into secondary and technical and the board now consists of three separate branches

The Act of 1902 The necessity for finding a solution to the problem of local authorities was brought to a head in 1901 by the decision of the Queen s Bench in the case *Rex* v *Cockerton* in which it was declared that the creation of the higher

grade school was illegal Two temporary Acts of Indemnity (1901 1902) were passed to maintain the *status quo* but it was clear a new Act of Parliament was needful to straighten out the situation This was done by the comprehensive Act of 1902 Under the Act which dealt with the whole educational problem secondary education proper was included in a section entitled Higher Education, an " omnibus title that comprised also university technical and evening education of all kinds in fact, all education other than elementary The county and county borough councils were made the sole authorities but the councils of non county boroughs and urban districts might aid higher education to the extent of a penny rate The rate available in counties for higher education was restricted to 2d in the £ in the boroughs it was unlimited Probably the most important clause in the Act was that which dealt with the general co-ordination of education within each area and laid down that the local authority must consider the educational needs of the area and take such steps as seem to it desirable after consultation with the Board of Education, to supply and aid the supply of education other than elementary, and to promote the general co-ordination of all forms of education In making such a survey a council was also to take into account the existing supply of education Such supply did not of course con note such purely non local schools as Eton and Harrow which perform a national rather than a local service No particular form of religious instruction was to be required by the council but religious facilities might be provided for those desiring them provided the costs were provided from extraneous sources The establishment of an education committee was statutory All matters dealing with the administration of the Act except the powers of levying a rate or raising a loan might be referred to it The majority of the committee were to be appointed by the council from its own members unless, in the case of a county council otherwise determined persons of experience were to be co-opted, and some of them must be women

London and the Act of 1903 The Act of 1902 dealt with England with the exception of London whose education was settled by a Bill largely on the same lines in the following year London being treated as a single unit

The Act of 1902 was at once accepted by the new authorities Committees were appointed surveys were made and as a result a good number of higher grade schools were converted into ordinary secondary schools In London however the authorities have preferred to maintain these schools as " tops ' for elementary education while supplementing the supply of secondary education by the erection of new secondary schools The majority of these higher grade schools have been re named central schools and their curriculum after a preliminary year more or less general in nature receives a definite commercial or technical bias The policy thus adopted is largely in accordance with the suggestions of the Board of Education in 1906 which on the recommendation of the Consultative Committee, proposed a new type of higher elementary school having for its object the development of the education given in the ordinary public elementary school, and the provision of special instruction bearing on the future occupation of the pupils whether boys or girls This tendency to bring the school into closer touch with the future calling of the pupil has not been without effect on the ordinary secondary school with a normal leaving age of 16 And, in the towns—on the suggestion and with the approval of the Board of Education—a certain amount of commercial work has been introduced into the last year or years of the course for boys and girls, while specialization in home science for girls also exists in some schools Specialization if not in name has already, in fact existed in the large secondary schools (with a normal leaving age of 18–19) in the shape of the Army class and special preparation for university scholarships but in some schools—notably Highgate—the system of reclassifying boys over 16 into sections which prepare them for their future career —whether at the university or in business, or elsewhere—has been reduced to a system

Developments Due to the Act of 1902 Since 1902, in county districts a good many schools have been built or old foundations revived but the majority of their curricula have been more or less on orthodox lines In 1915 however the Board of Education issued suggestions for bringing the small secondary school in the country more into touch with the agricultural industry And similarly rural ' tops " have been proposed for the ordinary elementary schools in the country This policy is in keeping with the recommendations of a report of the Consultative Committee in 1909 in dealing with continuative education after the primary school for training for industrial and agricultural life It is possible that the growing demand for free secondary education if ever realized will rather come in the form of a choice between many types of continuative education varying from purely general secondary education to more or less specialized types of technical education ultimately with some kind of part time instruction prolonged to the age of 18 for those who are obliged to leave school at an earlier age than 16 This view is supported to some extent by the experience of the working of the scholarship system in London which seems to show that the numbers of pupils who can benefit from an intermediate education of a general and literary type is more or less limited What is probably required are types of education that call for other natural aptitudes than the purely literary and abstract such as the artistic the constructive etc The scholarship system, apart from endowments dates from the days of the Technical Instruction Acts It underwent a great extension in 1907 when the Government by means of increased grants raised the number of free scholars from the elementary schools to 25 per cent in the secondary schools The schools received a grant of £5 (later £7) a child between the ages of 12 and 13, with £2 for those from 10 to 12 Schools already recognized were allowed under certain conditions to take a less percentage and received £2 in place of £5 The Board by its policy of aiding and recognizing schools had by 1914 15 built up a list of some 1 053 recognized schools containing about 203 000 scholars (110 000 boys 93,000 girls) In 1918-19 there were 1 095 such schools containing 273 393 pupils (143 984 boys and 129,409 girls) One effect of this sudden growth has been that classes of over thirty pupils have again become the rule rather than the exception

The majority of the larger (non local) public schools figure in this list Although not in receipt of grants they have, nevertheless been brought

under the oversight of the Board through voluntary acceptance on their part of inspection by the central authority In any case such schools are with a few exceptions, under the Board through the powers taken over from the Charity Commission

The Act of 1918 The Education Act of 1918 was intended to supplement and complete the attempt to develop a National System inaugurated by the Acts of 1902–3 It provided for the progressive and comprehensive preparation of schemes of all forms of education Many local authorities have already got to work more especially in the field of continuative education but owing to the strain on the personnel of the Board and the local authorities due to the war such schemes as the Board says must for the present (29th May 1920) be largely provisional The effect of the Act as far as secondary education is concerned will be to render the position of the non public secondary school still more precarious such schools being obliged to furnish the Board with any particulars the Board may require This demand for information looks like a preliminary step to laying down later on conditions of efficiency for such schools The only check to such an eventuality would seem to be the coming financial strain The Act further increases the provision for physical training including medical inspection to secondary schools It also makes provision for maintenance allowances to secondary pupils and abolishes the restriction of 2d in the £1 on the county rate for higher education

Examination and Inspection The Board has of recent years largely increased its inspectorship the alternative system of inspection by the local university contemplated by the Act of 1899 after a certain amount of success at the start having failed to develop Yet the local or national university is or ought to be the spiritual head of the local or the non local schools Moreover the growth of the provincial idea and the possibilities of larger areas may possibly lead to the universities taking a larger share in the work At any rate the examinations of the secondary schools through the Local Higher Certificate London Leaving Examination etc are mainly conducted by the universities The mischief is that there are still far too many independent authorities who maintain their own entrance examination Their number has been estimated at ninety by the Federal Council of Secondary Schools The disastrous effect of this diversity of tests on the work of the upper classes of the schools is manifest The Board made a preliminary effort through Circular 249 to get the schools and examining bodies to agree on a common policy for diminishing and standardizing leaving examinations The proposals were welcomed in many quarters but some uneasiness was shown on the part of the schools lest their adoption should fetter their internal autonomy Attempts have lately been made to equate the various examinations while the Board has taken a further step of requiring all schools aided by the Board to present their pupils in forms and not individually for the various leaving examinations

Teachers An attempt to establish a register of teachers was made in 1903 under an Order in Council of 6th March 1902 A Teachers Registration Council was appointed who established a register with two separate schemes (A and B) for elementary and secondary teachers with supplementary registers for other teachers This arrangement proved distasteful to the elementary teachers and the Register was abandoned in 1907 and it was only in 1912 that a new Register was established (*q v*)

Unfortunately the training of secondary teachers, as far as men are concerned proceeds but slowly though training facilities have existed at Cambridge since 1890 and all the universities have now training departments attached to them for secondary as well as primary teachers Moreover the first and the present Register have each laid down dates after which evidence of training will be required from those seeking admission to the Register but such dates are rather of the nature of the movable feasts Too many head masters still believe in the theory of *Faber fit fabricando* Something may perhaps be done by local authorities insisting on a course of training after appointments for the untrained

From 1902–1914 salaries which were often unsatisfactory showed an upward tendency as the county councils established regular scales of salaries In the great public schools the boarding-houses still provide the chief prizes for the assistants But the Great War and its effects have left the secondary teacher in a far worse position than before though a substantial rise is now certain under the impending Burnham award Tenure though still less certain than in the elementary schools was by the Act of 1908 rendered more secure Up to that date in the non council schools an assistant was liable to three months notice with no cause assigned In the council schools tenure tends more and more to become assimilated to that which prevails in the elementary schools under the same authorities The Pension schemes adopted by some school governing bodies and also by several local authorities have now been superseded by the Government's pension scheme (came into force 1st April 1919) Teachers on retirement after thirty years receive $\frac{1}{80}$ for every year of service or one half of their salary whichever is less together with a substantial bonus amounting to $1\frac{1}{2}$ years salary This twofold amelioration of the publicly paid teacher's position in salary and pension will render the recruitment of teachers for the private school difficult if not impossible and even the big public schools will have seriously to consider whether or no they will accept some form of State control

Assistant masters and assistant mistresses have each their separate association while head masters belong either to the Head Masters Conference or the Incorporated Association of Head Masters or to both The former is composed of head masters of schools sending a certain number of pupils yearly to the universities

Other Recent Developments and Data. Advanced courses were introduced in the schools by the Regulations of 1918 At present they number 242 (140 science and mathematics 26 classical and 76 modern studies) With the granting of greater elasticity notably by the admission of the study of Latin alongside of modern subjects they are likely to further increase The cadet corps (Sept 1919) numbered 98 and the O T C contingent 92 The teaching staff (2nd April 1918) numbered about 13 000 but several were still away at the time on military service But the present shortage of teachers seems likely to grow if the continuation schools are developed About ten grants were made in 1919-1920 to schools for experimenting At

present the Board seems somewhat preoccupied by the early leaving age in some schools

The national expenditure on secondary education in 1901-1902 was £120 000 and, in 1915-1916, £783 000 while the outlay on higher education loan grants and rates (one cannot disentangle the figures for secondary education) were, approximately during the same period from £1 057 399 to £4 126 852 The figures for 1918-1919 were approximately—national £1 534 984 local £2 696 000 (secondary education only) C BRERETON

SECONDARY EDUCATION IN IRELAND— It is not always easy to distinguish with precision between the different grades of education so strong is the tendency for them to overlap. This confusion is somewhat pronounced with respect to Irish secondary education which is not based on any well-organized system The Reports of the Census Commissioners mention "Superior Schools" which they define as institutions in which a foreign language is taught at least to an appreciable degree These schools include secondary schools more properly so-called as well as many others which have little or no right to such a description For practical purposes it is best to confine the term "secondary" to the education which is given in those institutions that come within the purview of the Intermediate Education Board for Ireland In 1919 these schools numbered 353 with a total school-roll of 21,182 pupils "Secondary School," as thus defined embraces very various types of schools, ranging from schools and colleges with excellent buildings and equipment and often with considerable endowments to schools badly equipped and poorly staffed which prepare with more or less success for the Board s examinations The regulations of the Board define an intermediate school as "an educational institution (not being a National school) affording a classical or scientific education, and having at least seven students' within the prescribed limits of age viz from 12 to 19 years This definition if not very precise is at least wide The grants paid by the Board as "results" enable it more and more to control secondary education Were some much needed reforms introduced, it would doubtless be a good thing to bring beneath its supervision the whole of the secondary education of the country As things are there is no unifying force, except the doubtful bond of a common examination programme The Board's imperfect constitution is the result of a compromise entered into to escape worse things

Early History. To understand Irish secondary education a cursory glance at its history is necessary The details are hard to get at buried as they are in State Papers—most of them unpublished—and in the Reports of numerous Commissions and Parliamentary Committees of Inquiry Existing educational agencies do not date back beyond the later Tudor epoch when English rule was first effectively extended to the whole country The story from that time down to even later than Emancipation (1829) is the record of an almost continuous attempt at the intellectual religious, and even ethnic assimilation of a subject-people to their conquerors

There is ample evidence to show that down to the time of the Elizabethan Conquest, and even later, abundant provision existed in Ireland for higher education in the great tribal schools of the bards in schools attached to monasteries and cathedrals and in the town schools which lasted well into the seventeenth century and—as at Kilkenny, Waterford, Limerick and, notably, Galway, —were famous for the excellence of their teaching The bardic schools, of course, decayed with the decay of the Celtic tribal organization consequent upon the English Conquest the ecclesiastical schools disappeared with the extension of the new religious settlement to Ireland the State Papers tell how the flourishing town schools were destroyed to make way for new foundations, whose object was national and religious proselytism Commission after Commission was appointed to root out the native teachers and destroy their schools "From this time forward' says Mrs Green "the way of the Irish scholar was marked by outlawry starvation, and death' The Penal Code of William and Anne made it a felony for a member of the overwhelming majority of the population to teach in his own country or to send his children abroad for the education which was denied to them at home Schools were set up to replace those which the new policy had destroyed, but they were foredoomed to failure by being confined to Protestants or designed for proselytizing The spirit of the new institutions is clearly set forth in the following extract from the Egmont MSS (Oxford, 1909), which gives the answer made by the Protestant delegates from the Council of Ireland to the proposals put forward by the Confederate Catholics (1644)—

"This proposition touching the incapacity of building schools doth obliquely cast some aspersions of tyranny on the State as though the natives had not power to have civil education in their own country Whereas in truth it is far otherwise Touching the education of youths, ample provision is already made By the statute 12 Eliz c 1 there is a free school in every diocese for the Latin and Greek tongues and other grammar learning at the charge of the clergy and impropriators of the diocese In all plantations made by the King and his royal father there be free schools, richly endowed with lands and revenues worth one, two or three hundred pounds per annum There is a free school kept by the Court of Wards for the education of his Majesty's wards There be free schools in divers corporations founded by protestants none that ever we know founded by papists Yet we humbly conceive that it is very fit that they be allowed to build as many free schools and universities as they please, so that they be ordered and governed by protestant schoolmasters, ushers, teachers, and governors Touching the Court of Wards great care is taken in bringing up the heirs of the nobility and gentry his Majesty's wards, in religion, learning and virtue, a school, schoolmaster, usher and all other necessary attendance is kept for them which hath gained many good protestants and truly this is the greatest tyranny and insupportable oppression that makes the Court and officers of the Wards be clamoured against because that so great care is taken in bringing up the youth in true religion" (Vol I, pp 223–224)

The schools set up in place of the destroyed Irish schools fall into the following groups The Diocesan Free Schools (1570) the Ulster Royal Schools and the Schools of the Irish Society—the Plantation Schools of James I, the Erasmus Smith Schools and the Blue Coat Foundations, Enclosed Grammar Schools of private or quasi-private

foundation, the Charter Schools of scandalous memory of Primate Boulter—originally primary schools but in their later development secondary schools under the management of the Incorporated Society All these schools had the object set forth so frankly in the Egmont MSS For them all ample provision was made or designed from Irish resources But their history, at any rate up to the Union is one of failure educationally they were condemned by successive Commissions and Parliamentary Committees while still more severe was their condemnation on grounds of gross abuse and malversation of endowments

With the limited relief afforded towards the end of the eighteenth century by such Acts as Gardiner s (1782) and the Relief Acts of 1792–1793 a strong impulse was given to Catholic education which had never wholly ceased despite the ferocious provisions of the Penal Code Schools were opened in the towns but through poverty and the lack of suitable teachers they were unable to do much In the country districts the hedge schools—a survival from the period of more stringent oppression —continued to make some attempt to keep alive a knowledge of classics and mathematics It is interesting to note the fondness of the writers of the popular ballads and songs for a spurious kind of classical allusion due no doubt to the hedge schools to which abundant references are to be found in the works of writers such as Carleton A list of subscribers to a treatise on Gunnery published in the latter half of the eighteenth century frequently uses the term "philomath to describe the subscriber s profession "mathematician' and surveyor are also of frequent occurrence—facts which go to show that some attempt was made to provide instruction in what were then the main branches of secondary education With the dawn of the nineteenth century the seminaries and colleges under the direction of the secular clergy and of religious bodies (male and female) made their appearance Side by side with them down to the constitution of the Board of Intermediate Education (1878) were numerous private schools owned by Catholic laymen Such schools do not now number more than half a dozen though there is nothing to hinder any one from setting up a school and earning the grants of the Intermediate Education Board

Modern Reforms and Developments The nineteenth century witnessed many proposals for improvement but little was done till 1878 when the Board was established Its functions were strictly limited by Parliament to those of a mere examining body distributing funds on the results of a written examination For its support £1 000 000 was granted from the Church Surplus Fund accruing on the disestablishment of the Irish Church (1869) this was supplemented later (1891) by a grant from the Local Taxation Account (Customs and Excise) —the "whiskey money The amount from this source naturally fluctuated very considerably—in 1891 it was £39 000 in 1900 it reached £71 400 in 1909 it was £46 566 in 1910 it fell as low as £16 998 An arrangement was therefore made in 1911 by which 1909 was taken as a standard year and the fixed annual sum of £46 566 is now paid to the Board The Board s Report for 1918 gives its total income as £86 108 and its expenditure as follows Administration £10 156, inspection, £5 462, cost of examinations £15 115 prizes and exhibitions £6 388 and school grant £47 089 of which £42 164 was paid on the results of the year's written examination The expenditure for examinations is somewhat remarkable amounting to nearly £1⅛ per head! For science teaching which since 1899 has been directed by the Department of Agriculture and Technical Instruction there is provided from the funds of the Department a yearly sum of £28 000–£30 000 There are also certain amounts administered by the Commissioners of Education in Ireland (constituted 1891) and by the Incorporated Society which are limited to certain schools and certain sums not very large contributed by county councils for "County Scholarships' The total is quite inadequate

An Act of 1914 provides £40 000 a year as 'the Teachers Salaries Grant" for lay assistant teachers in intermediate schools For the purpose of this Act the schools are divided into two groups Protestant and Catholic and the money distributed among them subject to certain conditions laid down by the Viceroy In addition to the £40 000 there is a further sum of £50 000 per annum now paid to Irish secondary education being the Irish equivalent of the new money for English education under the Fisher Act Recently a Bill has been introduced in Parliament proposing increased funds for Irish education but the proposals are coupled with administrative provisions of so revolutionary and contentious a nature that it would be unwise at the time of writing to prophesy that the Bill will ever become an Act The Bill is in general the outcome of two Committees that reported their findings at the beginning of 1919

The Examinations The Board s programme offers examinations in classics modern languages mathematics drawing physics mechanics chemistry physical and commercial geography botany domestic economy physiology hygiene book keeping shorthand music history and historical geography Recently there have been added a commercial course and a course in manual instruction and applied mathematics The examinations are open to pupils between 14 and 19 There are three grades Junior Middle and Senior Below 14 children are inspected by the Intermediate inspectors of whom there are eight In any grade a student must pass in the following subjects (*a*) English (*b*) arithmetic (*c*) algebra with geometry (boys) algebra or geometry (girls) (*d*) one language other than English (*e*) *two* other subjects except where either Latin or Greek is the subject of (*d*) in which case one other subject will suffice Honours are awarded if a student passing the examination generally obtains honours in at least three subjects Exhibitions and prizes are limited in the Junior Grade to candidates not over 16 Middle not over 17 Senior not over 18

The standard of work and the attainments of the pupils are well up to what obtains in English schools As for the subjects studied the returns show a decline in classics modern languages especially Irish and French are popular and so is German Spanish and Italian are practically non-existent Mathematics is a compulsory subject and is well taught Science is of the practical variety, and is widely studied The new courses in commerce and manual instruction show a desire on the part of the Board to study the life needs of the great majority of the students The Board has recently approved of a course in Civics which is further proof that they realize the connection of a country s educational machinery with its welfare This has not

always been true of the Board as its members, with few exceptions are not very eminent as educationists the principle on which they are chosen forbids that they should be

The Trend of Events Ireland used to be known as the *Insula Sanctorum et Doctorum* She may still be the Isle of Saints but the scholars are hard to find The schools turned aside from the truer purpose of education—a purpose they bore in mind when more evil times were theirs—to cramming their pupils for the sake of gain Exceedingly severe are the condemnations pronounced on the system by many thoughtful Irishmen, even by some of the Commissioners themselves It has done nothing to create a profession of secondary teachers they need have no academic or profes sional qualifications, they are judged solely by their capacity to pull their classes through the yearly examinations Yet the teacher must be the basis on which any real educational superstructure is raised True a beginning has been made to remedy the results of the neglect of nearly four decades by the Act of 1914 which establishes a Registration Council The newer developments regarding the teacher, and the tendency to narrow the examination sphere and introduce into the schools socially useful programmes are portents of good omen The needs for more efficient secondary education are being demonstrated with greater clearness every day we live It is the foundation of all higher education—technical as well as university The nation that neglects it will be outstripped in the race W J W

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SECONDARY EDUCATION IN SCOTLAND—The present system of secondary education in Scotland is largely a growth of the last thirty years Previous to the reconstitution of the Scotch Education Department in 1885 there was little attempt to organize the work of higher education in Scotland or to define the scope and aim of secondary schools There was also a lack of adequate financial assistance for the provision of suitable buildings and equipment or for a supply of well-educated and efficient teachers It will be necessary to trace how these two deficiencies have been gradually removed

Higher Class Public Schools By the Education Act of 1872 school boards had been established in every parish with the duty of providing "*efficient* education" for the children of "the *whole* people of Scotland" Two classes of schools were taken over by these boards parish schools, formerly under the management of the heritors and ministers, and burgh schools (*q v*) the control of which had been vested in town councils Those burgh schools in which the education given did not "consist chiefly of elementary instruction but of instruction in Latin Greek modern languages mathematics natural science and generally in the higher branches of knowledge were termed higher class public schools and were to be managed with a view "to promote the higher education of the country" Power was also given to school boards to include in the same class a parish school *existing at the passing of the Act* and giving higher instruction This made no provision for the future extension of higher class schools except in royal and Parliamentary burghs

Two points are worthy of attention regarding these higher schools Each school board was itself to determine the standard of qualification of the teachers and to appoint examiners to examine the schools annually There was thus no guarantee either that there should be any national standard of proficiency among the teachers or that the schools should follow any common course Further, the expenses of such schools were to be met by contributions from the "common good" of the burghs from endowments and from fees It was provided that such revenues should not pass into the School Fund and that no part of the expenses (of any such school) except those specially mentioned in the Act were to be paid out of that fund In actual practice this meant that school rates were not used for the promotion of higher education in these schools except to a very limited extent

These limitations were partially removed by the Act of 1878 when school boards were empowered to apply to the Education Department to conduct an examination in place of that required by the Act of 1872 to be conducted by their own examiners The application was optional, but this provision led to the holding of a uniform examination for the whole country

The use of the school rates was further defined and extended by the provision that the maintenance of the school buildings was a proper charge on the school fund The board was also empowered to pay from this fund such other expenses "for the promotion of efficient education" *as were not provided for in the former Act* Evidently it was still thought that adequate salaries to well-qualified teachers might be provided from the fees These, however were generally of small amount and with the rise of other classes of schools giving similar

facilities for higher education, the position of higher class public schools was for many years difficult

Higher Grade Schools. Although boards had been chary of expending the rates on higher class schools they did not altogether fail to provide facilities for higher education In many of the parish schools pupils were prepared for entering the university direct This practice was largely extended on the introduction of higher grade schools in 1899 when school boards were offered increased grants for the establishment of higher schools of a new type in which science and drawing would form important subjects The study of languages was to form no necessary part of the course though a modern language might be included Such schools were intended to differ materially in function from the higher class schools for in these latter Latin and Greek were given the place of honour Had this differentiation been carried out there would have been less competition between the rate aided higher grade and the higher class schools with little assistance from this source In a few years however the courses for higher grade schools were modified these may now include classics in their curriculum while in the higher class schools more attention is being paid to science drawing and modern languages

Higher Class Schools Meanwhile a third class of secondary schools had grown up owing to changes in the application of certain educational endowments Some twenty in all they included such schools as George Watson s Colleges and Heriot s School in Edinburgh Hutcheson s Schools in Glasgow and Robert Gordon s College in Aberdeen They were mostly situated in populous districts they were not under the management of school boards and had little connection with the Scottish Education Department until the institution of the leaving certificate examination to be described presently These also were known as higher class schools those controlled by school boards being differentiated when necessary as higher class *public* schools

Higher grade schools having rate support had thereby an advantage over higher class schools On the other hand since 1890 various sums of money had been ear-marked for secondary and technical education and the higher class schools had received a large share of these It is not necessary to describe them in detail but one of them—the "Equivalent Grant" of 1892 (amounting to £60 000)—must be mentioned as it led to the creation of new education authorities dealing with larger areas than the parish These were the "Secondary Education Committees' elected for the burghs of Edinburgh Glasgow Aberdeen Dundee Leith the parish of Govan and for thirty-two county districts exclusive of the above There were thus instituted thirty-eight authorities to deal with certain aspects of secondary education as contrasted with 950 boards interested mostly in primary education only By the Act of 1918 'Education Authorities' were created for these districts They control all grades of education under university rank These committees were entrusted with the preparation of schemes for the distribution of the equivalent grant in their respective areas Such schemes were interesting for their variety but were not always satisfactory as forming a basis for a national scheme of secondary education Accordingly we find in the "Annual Report on Secondary Education," frequent expressions of regret at the tendency to dissipate the grant in small payments over a large number of schools of a lower grade, "the primary function of which is elementary rather than secondary education" It may be argued now that this spreading of the grants over many schools has had the effect in many cases of laying the foundations of what have since become flourishing secondary schools At the time however it made the position of existing higher class schools still more desperate by withholding from them pupils upon whose fees the continued existence of these schools largely depended

Accordingly when in 1898 a further sum of money became available for secondary education, its distribution was placed in the hands of the Department Grants varying between £300 and £750 were made to each of fifty five higher class schools including a number not under school board management One of the conditions of the grants was that they were to be expended "*without diminishing the contributions to the school fund from rates or endowments*' The practical effect of this was that these grants were largely spent in adding to the staff or in augmenting salaries This in conjunction with the effects of the leaving certificate examination tended both to improve and to render more uniform the curricula of all secondary schools

To complete this sketch of the growth of local and State aid to secondary education it is only necessary to refer to two sections of the Act of 1908 one of which gave school boards power to draw on the rates for salaries of teachers in higher class public schools and enacted further that any school board having the management of such a school should be bound to maintain it in a condition of efficiency The other provided for the formation of the Education (Scotland) Fund to be used largely for higher education By the Act of 1918 all grants were paid into this fund and the distinction between State aid for primary and secondary education ceased

The Leaving-certificate Examination The other factor which has most influenced secondary education during the period under review was the institution of the leaving certificate examination It has been mentioned that school boards might apply to the Department to conduct an examination of their higher class schools No general examination however was held until 1888 when such schools were invited to present pupils for examination in certain subjects by means of papers set simultaneously throughout the country The presentation of candidates was optional but only pupils of higher class schools were eligible The certificates granted were of three grades and were for individual subjects only Had these conditions remained unaltered the effect of the examination on the curricula of secondary schools would have been somewhat limited Now however every candidate is expected to have in view the attainment of a *Group* Certificate These are of two grades The "Intermediate" Certificate testifying to "the conclusion of a well balanced course of general education suitable for pupils who leave school at fifteen or sixteen years of age" or of fitness to enter on a further course of education leading to the award of the "Leaving" Certificate The Intermediate Certificate is not issued unless the curriculum of the school has been approved by the Department and this as a rule must include the study of English

at least one other language mathematics, science, and drawing extending at least over three years

The natural effect of these conditions has been that nearly all secondary schools have now the same end in view for at least the first three years of their course

After pupils pass this stage successfully, they have a somewhat wider choice of subjects in preparation for the leaving certificate, but in this case also the curriculum must be approved by the Department and the "Normal course is indicated as including English and another language, and either mathematics or science—all being on the higher grade while at least a fourth subject is required on either grade In addition pupils may be presented in music drawing history geography domestic science or any other subject approved beforehand by the Department The course must extend for at least two years after the candidate has obtained the Intermediate Certificate

In the case of both certificates the result is not based entirely on the marks of an external examiner the teachers are required to assign marks to each candidate in each subject in which he is presented Where there is a discrepancy between these and the results of the written examination full weight is given to the verdict of the teacher in 1915 there were no fewer than 374 cases where the teacher's marks were preferred They were generally though not always in the pupil s favour The evils of external examination are thus minimized as far as practicable Corresponding to these two certificates schools beyond the primary stage are now officially classified as intermediate and secondary This nomenclature is based upon the *functions* of the schools and is to be preferred to the terms 'Higher Grade and 'Higher Class denoting that State-aid is given under conditions laid down in the Day School Code and the Regulations for Secondary Schools respectively The relations of the various terms may be seen from the statistics for 1915 when there were 146 secondary schools of which ninety were higher grade and fifty six higher class In addition there were 106 higher grade schools classified as intermediate There were thus in all 252 higher schools receiving State-aid and giving a course of education beyond the primary stage Besides these, some fifty others assist in the good work These are mainly in the large centres of population, and include such proprietary and endowed schools as Edinburgh Academy Merchiston Castle Loretto, Fettes College—all in or near Edinburgh Glasgow Academy and Kelvinside Academy in Glasgow and a large number of girls' schools These receive no grants from the State, but many of them are annually inspected by the Scottish Education Department and send in most cases, candidates for the Intermediate or Leaving Certificate There is thus an adequate guarantee for their continued efficiency and for them being considered as part of the national system of secondary education

Teachers Provision for a supply of well-educated and efficiently trained secondary teachers was made by the "Regulations" issued in 1906 In January 1905, a Minute of the Department had instituted "Provincial Committees" one in connection with each university These now undertook to provide professional training for *all* classes of teachers and not for elementary teachers only, as had been done by the (Church) training colleges previously By the "Regulations" it is laid down that the teachers of higher subjects shall reach in the subjects they desire to teach a standard equivalent to an Honours degree before undertaking a year's professional training Up to August 1913, 356 teachers (206 being women) had been recognized as qualified under these regulations It is doubtful whether this rate of supply is satisfactory It is worthy of note that the Department has not yet been able to lay down any more stringent requirement than that "in normal circumstances no school will be recognized as eligible for grants unless at least *one* teacher on the staff thereof for each of the principal subjects of the curriculum has been recognzied by the Department as a teacher of the relative subject" under the regulations Obviously until *all* the teachers are fully qualified for dealing with the subjects they profess educational efficiency must suffer The institution of a minimum national scale of salaries in accordance with the Act of 1918 may do something to command a satisfactory supply of well qualified men Without these, the full *national* benefits of secondary education cannot be realized

On the other hand, the supply of pupils has steadily increased in 1913, Sir John Struthers (in his Report on Secondary Education) was able to affirm that "one child out of every six or seven who leave the primary school does so to embark upon a course of higher education" two years later the numbers showed a growth of quite 7 per cent It may be inferred that, in Scotland, secondary education is not only highly valued but that there is every prospect of its benefits being more widely appreciated in the future J W B

SECONDARY EDUCATION IN WALES.—Under the Welsh Intermediate Education Act 1889, there was established in each of the counties and county boroughs of Wales (including Monmouthshire) a Joint Education Committee consisting of five members—three representing the County Council or County Borough Council and two appointed by the Lord President of H M Council

In the years immediately following the passing of the Welsh Act the Joint Education Committees met separately to consider the special circumstances of the counties to which they severally belonged, and also met together in conferences to consider general principles that were applicable to the whole of the Principality At these conferences proposals were adopted and were then forwarded by Joint Education Committees to the Charity Commissioners for their consideration in framing the various county schemes The first scheme came into operation in 1893 and the last in 1896 At the conferences of Joint Education Committees proposals were also considered for the establishment of a Central Authority whose main functions were to be the inspection and examination of the schools The scheme for the establishment of the Central Welsh Board came into operation in 1896

The Central Welsh Board The Board established under this scheme consisted of 80 members 47 members representing county authorities 17 members representing the university and university colleges, 5 members representing the head masters and head mistresses of intermediate schools 5 members representing the certificated teachers of elementary schools and 6 members co-opted by the Board With the addition of two representatives of a county borough subsequently created, the Board now consists of 82 members

A County Governing Body was established in

each county and county borough for the government of the schools established within that county or county borough

Under the County Governing Body there was established in each school district a Local Governing Body, to which certain functions were assigned by scheme for the management of the school or schools within that district

Under the Education Act of 1902 county authorities were established for the administration of all education other than university education and the powers and functions of the county governing bodies were transferred to those authorities

Before the Central Welsh Board Scheme came into operation, the inspection of the schools that were then established was conducted by the Charity Commission while the examination was conducted by examiners appointed for each county by the county governing body

The first examination under the Central Welsh Board was held in July 1897 and the work of inspection under that Board commenced immediately after the appointment of the first chief inspector in the spring of that year

The numerical growth of the schools under the Welsh Act is indicated in the following Table—

NUMBER OF PUPILS ON THE ROLL OF SCHOOLS UNDER THE WELSH ACT DURING THE PERIOD 1896 1920

Year *	No of Schools	Boys	Girls	Total	From Public Elementary Schools		
					Boys	Girls	Total
1896	47	1912	1445	3357	—	—	—
1897	80	3420	3007	6427	—	—	—
1898	88	3637	3275	6912	2641	1918	4559
1899	93	3877	3513	7390	2862	2141	5003
1900	94	3799	3646	7445	2920	2328	5248
1901	95	3876	3792	7668	2951	2517	5468
1902	95	4308	4014	8322	3342	2696	6038
1903	95	4475	4314	8789	3492	3010	6502
1904	95	4690	4594	9284	3931	3518	7449
1905	95	5116	5297	10413	4362	4127	8489
1906	95	5648	5929	11577	4828	4666	9494
1907	95	6029	6470	12499	5234	5212	10446
1908	95	6235	6727	12962	5415	5449	10864
1909	96	6577	7183	13760	5813	5922	11735
1910	98	6624	7105	13729	5928	5917	11845
1911	96	6498	6837	13335	5825	5719	11544
1912	96	6449	6768	13217	5787	5686	11473
1913	95	6597	6931	13528	5883	5726	11609
1914	97	6796	7396	14192	6162	6146	12308
1915	101	7174	8028	15202	6509	6867	13376
1916	101	7318	8782	16100	6665	7569	14234
1917	101	7551	9404	16955	6921	8177	15098
1918	101	8074	10209	18283	7431	8960	16391
1919	101	8962	11312	20274	8267	10026	18293
1920	101	9984	11948	21932	9228	10623	19851

* The year, *e g* 1920 means school year ending 31st July 1920

During recent years the schemes under which the schools were established have undergone considerable reconstruction but it may be stated that the main features of the system have not been materially changed

Finance and Inspection The funds available for Intermediate Education are derived from (*a*) a halfpenny rate levied for that purpose in each of the counties or county boroughs (*b*) a Treasury grant equivalent to the produce of a halfpenny rate (*c*) the Exchequer contribution (*d*) the Board of Education grants under the regulations for secondary schools (*e*) school fees and (*f*) in some cases from endowments

From the funds available for each school out of the County Fund a portion is set apart for entrance scholarships and exemptions from fees together with maintenance allowances

From the funds reserved for county educational purposes exhibitions tenable at places of higher education are provided These exhibitions are awarded on the results of the honours or higher certificate examinations of the Central Welsh Board In nearly all the counties additional funds are required for this purpose In several counties the keenness of the competition suggests the desirability of securing a Central Fund in order that exhibitions may be awarded from that source to the best pupils in the country as a whole The County Funds would then be available for pupils who have reached a high standard but who owing to the severity of the competition might not be able to secure exhibitions

Under the Treasury Regulations there must be an annual inspection of each school In the years 1897–1901 the inspection was conducted mainly by the Chief Inspector while some of the schools were visited by temporary inspectors In 1901 an assistant inspector with special qualifications in science was appointed In the year 1901 a scheme of biennial inspections was introduced—a scheme under which about one half of the schools were to receive a fuller inspection in alternate years while the ordinary inspection was to apply to the remaining schools In the year 1903 this scheme was replaced by a system of triennial inspections under which about one third of the schools were to receive a full inspection while the ordinary inspection was to apply to the remaining schools

At the triennial inspections the permanent inspectors of the Board are assisted by temporary inspectors whose special knowledge of special subjects or groups of subjects may be considered necessary in order to arrive at a complete estimate of the work of a school In the triennial inspection of those schools in which there are girls at least one of the temporary inspectors must be a woman

In the early years of the Central Welsh Board inspection was new to secondary schools and great stress was laid on the spirit in which it was to be conducted It has been the desire of the Board from the first that the inspector may be the friend and adviser of the schools There is every reason to believe that the guiding principle herein laid down has influenced the inspections of the Central Welsh Board from the beginning up to the present time

The Examination System By Treasury regulations there must be an annual examination of the schools In 1898 a scheme for the award of certificates was introduced Junior and senior certificates were awarded on the result of the examination held in July 1899 The senior certificate was recognized in lieu of matriculation by the University of Wales Recognition by other universities and public bodies followed in due course In the year 1899 1900 the honours certificate was established for the encouragement of advanced work For some years papers of the higher and lower honours standard were set, but candidates were required to offer at least one subject at the higher stage In the year 1909-1910 the higher and lower stages were separated, and the higher certificate was established The examination for the higher certificate was based on the lower honours stages while from that time the examination of the honours certificate was based on the higher honours stages except that candidates

for the honours certificate were permitted to offer one subject at the lower stage

This examination system consisting of four distinct grades was in operation up to 1916 The normal course leading up to the junior certificate examination extended over a period of not less than three years while the senior certificate examination is taken generally at the end of the fourth year and occasionally at the end of the fifth year The higher certificate examination was based on one year s work after the attainment of the senior certificate and in standard approximated that of the intermediate examination of modern universities Candidates for the honours certificate had to undergo a course of instruction of not less than two years after the attainment of the senior certificate Some indication of the standard represented by the honours certificate may be gathered from the fact that candidates who obtained not less than 75 per cent of the marks obtainable on certain combinations of subjects required for certificates found no difficulty in securing open scholarships at Oxford and Cambridge

In 1917 the higher and honours stages were amalgamated and one examination termed the higher established above the matriculation standard The higher examination is now optional and is intended for pupils who have pursued a higher course of study for two years after passing the senior examination It continues to provide sufficient scope for those pupils who may be expected to reach the highest standard that can be obtained in a secondary school

In December 1919 the Central Welsh Board decided that pupils should not be presented for the junior examination unless the governors of the school should have satisfied the Executive Committee that it was expedient on educational grounds that they should be so presented From July 1921 therefore the Central Welsh Board system will normally consist of two examinations the senior and higher corresponding to the first and second examinations of the co ordination of examinations scheme under the Examinations Council In March 1919 the senior certificate was approved by the Examinations Council and the approval of the higher certificate is under consideration

In Scotland the order in which candidates are placed in a subject is set forth in a report which is sent by the school to the central authority This report from the school is carefully considered in the case of all candidates whose performances in any subject at the examination may be described as being on the border line between pass and failure This method was discussed in Wales some years ago and was tentatively put into practice in 1919 It is evident that this plan requires very careful organization if equality of standard is to be maintained It would be necessary to consider very carefully (1) the number and general character of the tests on which the order of merit is established (2) the method adopted in the application of those tests (3) the ratio between the credit assigned to steady work over an extended period and the credit assigned to an accelerated rate of progress towards the end of that period (4) the precautionary measures taken to prevent inequality of standard and (5) the arrangement made for the collection and due appraisement of results obtained from the schools

In the system of education established under the Central Welsh Board there are several features which deserve special notice as indicating pioneer work From the earliest years of the Board s work, great importance has been attached to a system of alternative schemes This system has preserved for the schools that freedom of initiative which has so largely contributed to the success of their work In each subject and in each stage of a subject, the annual examination is based *either* on a syllabus laid down by the Board and accepted by the school *or* on a syllabus sent in by the school and accepted by the Board Every effort is made to bring the examination into close touch with the actual work done in the schools In the discussion of alternative schemes educational principles and equivalence of standard require careful consideration

Great stress has always been laid on the practical side of the work in science At the higher and honours stages examinations for individual pupils are held by specialist examiners in each of the science subjects At the senior, junior and lower stages of the course, the practical work is reviewed in the course of inspection At all stages schemes of practical work are submitted from time to time to the Board and returned to the schools with any suggestions that may be considered desirable

In modern languages also great stress is laid on the practical side of the work Specialist examiners visit the schools to test the pupils in conversation and reading The results of these oral examinations are taken into account in connection with the work of the pupils at the written examination

Work of a pioneer character has also been achieved in the introduction of improved methods in the teaching of geography

The correlation of examination and inspection has contributed very materially to the introduction of reforms in the methods of teaching, and to the improvements in the general organization of the work Inspection and examination are regarded as separate functions, and are correlated in so far as it may be necessary if the highest efficiency is to be attained Where these two functions are under the control of one and the same body as in Wales many problems are easily solved—problems that present considerable difficulty in a country where these functions are controlled by separate authorities The fact that nearly 90 per cent of the pupils admitted to intermediate schools in Wales come from elementary schools points to the great importance of all problems relating to continuity of instruction The very large proportion of pupils in intermediate schools who hold scholarships free places and maintenance allowances, suggests an inquiry as to whether secondary education between the ages of 12 and 16 should be entirely free as in the primary schools For the higher secondary course from 16 to 19 the present system of exemption from fees on the result of an examination might be retained

The Reports on the inspection and examination of schools, issued by the Central Welsh Board for the purposes of the Treasury grant, are transmitted to the Board of Education, and copies are forwarded to the local authorities O OWEN
E W JONES

SECONDARY SCHOOLS AND THE GREAT PUBLIC SCHOOLS, DAY —A day school may become

a "Great Public School" just so far as it can realize the conditions which make a public school what it is A public school is not merely a place of learning, but a home a community It realizes that character is developed not by teaching but by life and it creates a special world for the boy to live in It controls his whole environment takes hold of him on every side Life in such a world begets always strong and deep-seated traditions which become an atmosphere and it is these traditions affecting the master no less than the boy that in the main mould and determine development in the public school

Is it possible to reproduce these conditions in the day school? At first sight the answer might seem to be No Since the life of the day boy is necessarily divided between school and home there can never be the same homogeneous atmosphere the same continuity of influence Nevertheless it is possible with suitable arrangements to make the day school a real community with a life and traditions of its own and if the day boy is inevitably subjected to a double influence yet much may be done to harmonize the two elements and to weld them into a homogeneous force

One of the main difficulties of the day school is that the hours which the boys spend within the walls are brief and interrupted and that the buildings and equipment the whole organization are adapted for teaching—not for life But there is no reason why the day school should not with the exception of sleeping accommodation make the same provision as the public school for the whole life of its pupils or why they should not pass their whole day under its influence The day school like the public school should possess besides class rooms ample grounds and playing fields living rooms and studies facilities for hobbies a museum libraries workshops private rooms for masters a dining hall a chapel A boy passing his day in a school thus equipped—taking two meals there, and perhaps completing his preparation for the following day—might enjoy to a very great extent the life of a public school

Difficulties to be Overcome Most day schools make some attempt in this direction but in few is anything approaching the life of a public school attained—partly for lack of equipment but still more for another reason

Just as the best schoolmaster is hampered by inadequate equipment so the best equipment is useless without the right men And the day school cannot get enough of the right men because it cannot offer the salary and prospects which will attract them and it cannot make full use of those it does get partly because the day schoolmaster must eke out his income by other means and the school cannot for very shame require of him the laborious and exacting service which is rightly required of the public school master

Co-operation between Parent and Schoolmaster But apart from financial difficulties there is no reason why the day school master should not like his colleague of the public school make himself the guide philosopher and friend—as well as the teacher—of his pupils and take responsibility for their whole developments though his task is profoundly modified by the difference in circumstances In the public school the home and the parents become remote and shadowy influences distant in space and time there is little communication or co-operation between parent and schoolmaster In the day school they can if they will join forces It should be one of the principal functions of the day school master to bring about this understanding to know the home life of his boys, to make intelligible to their parents the aims and ideals of the school and no less to understand and give sympathetic consideration to the parents own ideas and needs

This complete co-ordination of the influence of home and school would make great demands upon the schoolmaster who would have to prepare himself very thoroughly for his task But it is surely the true ideal and those who know most thoroughly English schoolmasters and English homes will be least inclined to doubt the possibility of its realization

What can be Accomplished There seems then nothing in the nature of a day school to prevent it from realizing substantially the conditions of the public school But under existing circumstances it is impossible to expect more than an approximation to this ideal since a day school such as has been sketched must charge very much higher fees That there is room for such schools is more than probable There must be thousands of parents who would willingly pay much more than the average day school fee to secure a real education

But apart from the economic demand it is imperative that such a type of school should be created as a model for the education of the future It is a type to which all good education must conform and if once created, it would exert a powerful influence upon schools of every type and grade It is capable of universal application at least in the secondary sphere and the cost need not be such as a nation in earnest about its schools would find prohibitive Education is not teaching it is a life It is the complete adaptation of the whole environment so as to produce certain definite reactions maintained over a period long enough to secure a development which will permanently retain its form An education which does not fulfil these conditions is in truth no education at all It does but usurp the name F J R H

SECONDARY SCHOOLS ASSOCIATION, THE — This Association called into being in October 1907 held its first meeting in January 1908 Its aim is to safeguard the interests of secondary schools and secondary education generally by promoting interchange of experience among governors of secondary schools by furnishing information and advice to members of governing bodies and others as to the regulations and decisions of the Board of Education and of local education authorities and as to the questions arising on schemes of the Board of Secondary Schools and on other matters by communicating with the Board of Education local authorities and other bodies in the interest of secondary education by obtaining such alterations in the regulations of the Board and of local authorities and in schemes for secondary schools as may seem advisable and by Parliamentary action when necessary A meeting and conference are held annually Many schools and endowments are represented on the Association

The central offices are at 25 Victoria Street, Westminster S W 1

SECONDARY SCHOOLS' EXAMINATION COUNCIL —(See LOCAL EXAMINATIONS (UNIVERSITY), THE HISTORY, WORK, AND PROGRESS OF)

SECONDARY SCHOOLS, SCRIPTURE IN.—(See BIBLICAL INSTRUCTION IN SCHOOLS)

SECRETARIAL WORK, THE TEACHING OF COMPANY.—The subject of company secretarial work does not at present occupy a prominent position in the schemes of commercial education This is somewhat surprising when one considers the onerous character of the work of the company secretary and the penalties to which he is subject for default in carrying out the provisions of the Act of Parliament by which his company is governed One reason for the lack of classes in this subject is probably the fact that apart from the examinations conducted by the professional bodies of secretaries the educational examining bodies (with one or two exceptions) do not cater for students of secretarial work although the cognate subject of Company Law is included in all the examination schemes Secretarial work is so interwoven with Company Law that it is impossible to teach the former without dealing with the latter This is a difficulty which many teachers of secretarial work experience owing to the regulations adopted by some educational bodies by which no one but a solicitor or barrister is allowed to teach Company Law The result is that the law is taken in one class and the practice in another—an arrangement which leads to a great deal of overlapping As an example of this take the case of "forfeited shares The legal aspect of the matter is dealt with in the Company Law class, the secretarial work in connection with the carrying out of the forfeiture is considered in another class held perhaps several months earlier or later while the book-keeping entries are explained in a book-keeping class held at another period

It is suggested that the most satisfactory way of dealing with the matter is to combine Company Law, Secretarial Practice and Limited Company Book-keeping in such a manner that the same teacher may deal with all three subjects This can be done in a class of two hours' duration held once a week The topic under consideration can be discussed in all its aspects the overlapping is avoided, and a great saving of time is effected

Where, however, the arrangement suggested above cannot be adopted the teacher of secretarial practice should co-operate with the teacher of company law and the syllabus of each should be drawn up to prevent, as far as possible, overlapping

The students who attend classes in secretarial work are usually of mature age, and very earnest Many of them are engaged in the offices of limited companies and are preparing for the examinations of the professional bodies of secretaries The teacher will find that they are keenly interested in the practical side of the work, hence he should be a man who has had practical experience in company work, otherwise, he may not be able to deal satisfactorily with many of the knotty points which come before the notice of the students, and which they bring to class for solution

The following scheme is suggested for a course of about thirty lectures of one hour each, it being assumed that the legal and book-keeping phases of the subject are dealt with elsewhere

The Company Secretary—kinds of Companies—Memorandum of Association—Articles of Association—Directors and Auditors—Capital and Shares—Prospectus—Application for Shares—Allotment of Shares—Register of Members—Share Certificates—Calls—Transfer of Shares—Borrowing Powers and Debentures—Meetings of Shareholders—Meetings of Directors—Minutes—Reports—Annual Return and Summary—Dividends—Winding up

It will be an advantage if the text-book used contains the Companies Acts 1908 to 1917, as it is frequently necessary to refer to the exact wording of the sections quoted An added interest will be given to the lessons if each student is provided with a set of the more common forms used in company work These forms should be filled up when the matters to which they refer are discussed, the students following the specimen put on the blackboard by the teacher By the adoption of this method, the student not only becomes familiar with the forms actually used in practice, but at the end of the session, he has a set of forms filled up in the manner approved by the Registrar of Companies showing all the steps in the career of a company from its inception to its winding up

Although in the main the lesson will take the form of a lecture the students should be given the opportunity of discussing the points raised, an opportunity of which they will willingly avail themselves

In the scheme outlined above the opening lecture deals with the company secretary, a topic which can be made very interesting by an exposition of the importance of the office the training qualifications duties powers, and legal position of the secretary The lecture on "Kinds of Companies' should treat of unlimited companies and those limited by guarantee and by shares Without going too fully into the matter, the distinction between public and private companies might be mentioned and reference made to Cost Book Companies and companies formed under special acts Only the main features of the Memorandum of Association need be touched upon as this subject will be treated in detail in the law class With regard to the Articles of Association, emphasis should be laid on the necessity for the secretary to be thoroughly acquainted with the contents of the Articles of the company in which he is engaged and the teacher should remind the students that although Table A will be used in the class, the Articles of the companies in which they are interested may differ from Table A in several respects The real secretarial work commences with the application for shares and attention should be given to the status of various applicants, *e g* women, infants, etc The ruling of the application and allotment sheet should be given and the class instructed in the proper way of making entries thereon Due consideration should also be given to conditional applications, the withdrawal of applications and the return of application money The allotment of shares gives scope for an interesting lecture in which an account should be given of the office arrangements which are necessary in order to cope efficiently with a large allotment The resolution of allotment should be noted and the allotment sheets entered up Then would follow an explanation of the use of Letters of Allotment and Letters of Regret, after which the Return of Allotments would be prepared All the documents mentioned should, of course, be filled up by the students under the supervision of the teacher The next step is to write up the Register of Members, a ruling of which should be

in the possession of each student A reference should be made in this lecture to the rights and liabilities of joint shareholders and bankrupt shareholders, etc, and to a member s right to inspect the register The closing of the register and the keeping of a Colonial Register might also be considered at this point The issuing of the share certificates now requires attention and the opportunity would be taken to point out the regulations regarding the use of the seal and the procedure in case of lost certificates Share warrants might also be explained in this lecture In treating of calls, it will be necessary to direct attention to the use of and ruling for, the Call Book, the resolution making the calls and the entries necessary in the Register of Members The non payment of calls leads to forfeiture of shares and the procedure connected with forfeiture should be carefully explained special attention being directed to the necessity for following in every detail the provisions of the articles

Several lectures may be devoted to Transfers This is probably the most interesting part of the syllabus as it is also the one on which the ideas of the students are most hazy A good plan is for the teacher to fill up a number of transfer forms each form containing a special point The forms would be handed to the students who would be asked for the correct procedure in regard to each Among the topics to be dealt with in the first lecture on transfers are the certification of transfers the use of transfer receipts and balance tickets the sending out of notices of lodgment The second lecture could be devoted to the examination and registration of transfers (special attention being paid to consideration and attestation) the register of transfers blank transfers and the power of directors to refuse transfers The third lecture (and possibly the fourth) could be devoted to transmission This subject requires very careful treatment especially that section relating to the registration of personal representatives of deceased shareholders

The distinctive features of ordinary extraordinary and special resolutions should be pointed out and the ways in which the sense of a meeting is taken should be explained This will necessitate a consideration of the voting power of members by show of hands and by poll voting by proxy and the availability and stamping of proxies The drafting of minutes deserves serious attention as this important branch of secretarial work is frequently done in an unsatisfactory manner The teacher should explain the object of taking minutes and give some hints as to how they ought to be taken This should be followed by an explanation of the meaning of confirming the minutes and the students notice should be called particularly to the importance of not altering minutes after they have been signed Plenty of practice in drafting agenda and minutes should be given

The secretarial work in connection with debentures relates chiefly to issue of the bonds the register of debentures the register and registration of mortgages and the redemption of debentures and these are the matters to which the teacher should give attention making throughout free use of the necessary forms and rulings Meetings can be considered under three headings, viz, Statutory Meetings Ordinary and Extraordinary Meetings Directors Meetings The regulations regarding the convening and conducting of each kind of meeting should receive attention, and the class should be given plenty of practice in drafting notices of meetings and resolutions of various kinds F H

SECRETARIES FOR EDUCATION, ASSOCIATION OF DIRECTORS AND —In the initial stages of the movement for giving effect to the Technical Instruction Act of 1889 which Act was purely optional in its application, but became a living educational force by the passing of the Local Taxation (Customs and Excise) Act 1890 which became operative early in 1891 it was naturally felt that to deal effectively with administrative and educational difficulties which must inevitably arise the formation of an Association of the officials appointed to organize technical instruction throughout the country would become imperative

At that time beyond a somewhat narrow circle few throughout the country knew exactly what were the aims of those who had brought into being the Technical Instruction Act 1889 and not only those for whom schools and classes had to be organized but the authorities into whose hands had been placed the direction of affairs were in need of enlightenment consequently the organizing secretaries welcomed the proposal to start an Association

From a small beginning the Association has steadily grown in importance until now it embraces practically all chief whole time administrative officers

The Education Act 1902 brought the whole of Education under the control of the County and County Borough Authorities in place of merely dealing with technical education and the further powers conferred under the Education Act 1918, pointed to the necessity of a still further enlargement of the membership to include the administrative officers of Part III Authorities that is authorities dealing with elementary education

Membership of the Association is open to the chief salaried education officers of the County Councils County Borough Councils and Part III Authorities who are wholly employed in education organization or administration provided that where there are co ordinate officers in one administrative area more than one may in the discretion of the Executive Committee be eligible for membership

The annual subscription to the Association is £2 Meetings are held quarterly in various parts of the country voted on by members but the Annual General Meeting is always held in London

The object of the Association is to confer on matters relating to education with a view to the members and through them the committees by whom they are employed having the benefit of the practice and procedure of other committees in all matters connected with the administration of the Education Acts

SECTIONS, THE DRAWING OF —If a solid object is cut across by a plane so as to expose the interior the plane surface thus exposed is called a section The practical utility of drawing sections is most apparent when the exterior form of the object does not indicate the form of the interior In the solid bodies generally used for the study of solid geometry the shape of a section can be easily

determined even without the process of cutting But in dealing with a hollow sphere, cylinder or other body the section shows the thickness of the material For practical purposes the most useful sections are those made by horizontal or vertical planes In architectural plans horizontal sections are used to show form size and positions of the parts of a building at various heights from the base Like all other drawings of the architect they are drawn to scale and are guides to himself and all others concerned A vertical section of a building represents what would be seen if it were cut through by a plane at right angles to its base line A useful application of the vertical section is seen in the construction of the road profiles found in tourists route books In these the section ignores the nature of the interior but the upper boundary line is an indication of the form of the road on the surface of the route traversed Sections are of great value to the anatomist and surgeon to indicate the position of the internal parts of the body and their relation to one another For constructing anatomical sections a body is frozen so as to form a compact solid before being cut through

Sections in Mathematics The sections made by planes which intersect a cone give rise to a series of curves of great importance in geometry If a cone is cut by a plane at right angles to its axis the boundary of the section is a circle if cut by a plane parallel to the axis the boundary curve is a hyperbola if by a plane parallel to the slope of the side the boundary curve is a parabola but if cut by any other plane the curve is an ellipse Of these only the circle and the ellipse are closed curves The sections thus formed are all known as conic sections and the curve in each case is regarded as the locus of a point In the circle the circumference is the locus of a point at a fixed distance from a fixed point In the other three cases the curve is the locus of a point which moves so that its distance from a fixed point bears a constant ratio to its distance from a fixed straight line if this ratio is unity the curve is a parabola if less than unity an ellipse and, if greater than unity an hyperbola

SECULAR EDUCATION LEAGUE, THE —The Act of 1902 (*q v*) was not an accepted settlement of the religious controversy in the province of elementary education Yet a settlement was greatly desired and the Bills of Mr Birrell (*q v*) 1906 Mr McKenna (*q v*) 1908 the Bishop of St Asaph (*q v*) 1908 and Mr Runciman (*q v*) 1908 had all tried hard to secure it and had all failed Mr Runciman's Bill in particular had roused hope—and perhaps expectation—of peace and its rejection had caused corresponding disappointment The Education Settlement Committee had made suggestions but plain men were thinking—and saying—that "the theologian barred the way"

With the abandonment of Mr Birrell's Bill many turned favourably towards a negative solution of the religious difficulty there should be no religious teaching at all as part of the school course The Secular Education League was formed early in 1907 "for the purpose of urging the secular solution in National Education upon the country and upon His Majesty's Government' It "aims at State neutrality on the question of religion in State-supported schools advocating that in them education should be confined to subjects defined as 'secular' in the Official Code' It voices the view that the sole responsibility for religious education rests with parents and the churches

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Secretary Mr H Snell A E L

SECULAR SCHOOLS —This is a term applied to schools in which no religious instruction is given No State aided schools in the British Isles are, strictly speaking secular schools but in board schools (1870–1903) and after 1903 in provided schools no definite denominational religious instruction is given, hence the schools are often considered secular In France the secularization' of the schools meant the taking of elementary education out of the hands of religious bodies and placing it entirely under the management of the State In America there are many secular schools in which no religious teaching is given

SEDBERGH SCHOOL —Founded as a grammar school in 1525 by Provost Lupton of Eton, with revenues drawn from a chantry Sedbergh came to an abrupt end in 1547 under the Chantry Act of Henry VIII It was refounded by Edward VI with a new endowment in 1551 The little market town in the north of the West Riding is situated in a secluded valley surrounded by hills The school buildings are complete and commodious comprising chapel laboratories gymnasium swimming-bath sanatorium rifle range and concert hall besides five boarding houses Upwards of 350 boys are prepared for the universities the Services and professional and business careers Three exhibitions at St John's College Cambridge belong to the school which has a share also in certain Yorkshire scholarships at Christ's College Cambridge, and Queen's College Oxford Hartley Coleridge was a master at Sedbergh for a time and Adam Sedgwick the famous geologist a pupil

SEGUIN, EDWARD —Edouard Séguin was born at Clamecy Nièvre on 20th January 1812 and died in New York 28th October 1880 Belonging to a family of distinguished doctors he himself became a medical man and came under the teaching of Itard (*q v*) and Esquirol Esquirol was a great alienist Inspired by them, he devoted himself to the education of mentally defective children He opened a private school for idiots in 1839 and in 1841 began at the request of the Minister of the Interior to teach also the mentally defective children in the Hospital for Incurables In 1846 he published his most important work entitled *Traitement Moral Hygiène et Education des Idiots, et des autres Enfants arriérés ou retardés dans leur développement agités de mouvements involontaires débiles muets non sourds bègues etc*, which was crowned by the Academy, and became the standard text book for teachers of mentally defective children

In 1850 for political reasons he left France and settling in the United States as a general practitioner took an active part in organizing institutions for the care and education of defectives throughout the country He anglicized his name to Edward Seguin In 1866 he published in English *Idiocy and Its Treatment by the Physiological Method* Other important writings are *e g Report on Education* 1873 *Thermometry in the Family* (and school) 1873 *Our Parks To Be or Not to Be* (on garden schools *i e* open air schools) 1878

His Theory. He first defines idiocy as "a state

in which the intellectual faculties are never manifested or have not been able to develop sufficiently to enable the idiot to acquire the knowledge, in matters of education, which individuals of like age and in like circumstances receive" The problem, therefore, is to find means to develop the idiot's retarded powers Seguin finds the means to be the physiological development of the senses Since nothing is in the mind that was not first in the senses, the mind must and can alone in the first instance, be developed through the senses In defectives, mental development is retarded because physical development is retarded Hence "As soon as any function is set down as deficient at its due time of development the cause must be sought and combated if external removed if seated in the nervous apparatus counteracted by the earliest course of training and hygienic measures"

But though "the body is born before the mind" (Rousseau), yet Seguin insists that body and mind are a unity and that "it is impossible to deal with the muscular apparatus without acting on the nerves, bones etc , as it is equally impossible to bring into action these special instruments of activity without exercising also a reflex action on the intellect and the will To sum up his theory briefly, and in his own words "The education of activity should precede that of intelligence and the education of intelligence that of the will, because man moves and feels before he knows and he knows a long time before he has any consciousness of the morality of his acts and ideas" hence "The physiological education of the senses must precede the psychological education of the mind"

Pestalozzi and Froebel aimed primarily and constantly at the direct education of the mind Seguin aims in the first place solely at the education of the senses as such claiming that only so can the mind itself be properly educated at first

His Practice Seguin elaborated a systematic series of exercises and occupations for the development of the muscles the organs of the special senses and the nervous system When these have been secured then and not till then is explicit intellectual education proper to be begun and this is to be followed in due time by explicit moral education

The education of activity includes that of motility and sensibility The education of the muscular system by physiological gymnastics is first explained and illustrated in detail Special tables ladders spring boards swings etc are to be used by idiots to develop their defective muscular powers The hand receives particular attention and is developed by an elaborate series of exercises with special materials apparatus and exercises wooden blocks nail boards beads pins coins wafers cord-winding rope-pulling buttoning lacing bead threading the balancing pole, perpendicular and inclined ladders handling stones bricks pickaxes spades wheelbarrows work with sealing wax putty clay wood work with knife chisel hatchet saw hammer games and sports Next follows the education of the special senses for each of which specially devised exercises and apparatus are to be used and special rooms set apart In and through such work the nervous system is also educated

When all this has been done the mind is furnished with sound precepts and notions, and intellectual education proper can be begun This is based on the natural powers of imitation memory and imagination, for the developing of each of which Seguin has appropriate exercises On the teaching of drawing, writing, reading, arithmetic, science grammar, etc he has much that is original and valuable to say, he also sketches the lines on which what he calls the physiological infant school and primary school should be organized He anticipates many modern developments in his ideas on garden schools and thermometry in schools

Moral education (Seguin says) is the training of the will (*i e* the socializing of the individual), which can only be done through the relations of actual life He analyses the ideas of authority and obedience, liberty and will and describes the practical means by which a teacher can best command his pupils

Seguin expounded a new and essential phase of the problem of education viz , the place and function of physical education in its broadest sense He was the first to formulate and systematize the education of the body in such a way as to secure the best development of the mind His ideas and system have for a time been lost sight of except in schools for defectives and remain largely unfulfilled and undeveloped They are worthy of the most serious and scientific study Madame Montessori who freely and frankly acknowledges her indebtedness to him has started a revival of his method Much will be done to make coherent and effectual the most recent developments in physical education such as handwork organized games, open air classes and school clinics by applying Seguin's Physiological Method of Education revised in the light of present day scientific pedagogy—an application which he always had in view and strongly urged H HOLMAN

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SELBORNE SOCIETY, THE —Which perpetuates the memory of Gilbert White the author of the classic *Natural History of Selborne* was founded in 1885 and incorporated in 1917 as a Limited Liability Company without share capital There have been two Past Presidents the late Lord Tennyson Poet Laureate and the late Lord Avebury The present holder of the office is the Duke of Portland K G The chief objects of the Society are as follows—

To bring about an appreciation on the part of the public of the value of Science to the community, and to promote the study of Natural History and Antiquities to preserve from needless destruction such wild animals and plants as are harmless beautiful or rare, to prevent the killing and use of all animals of economic value which are in danger of extinction or serious diminution except in the case of examples which are known to be domesticated or preserved under conditions approved by the Society to encourage the breeding of wild animals (especially birds) which are helpful or useful to mankind to protect places and objects of natural beauty scientific value or antiquarian interest, from ill-treatment or destruction, to afford facilities for combined effort in promoting any of the above or kindred objects

Activities of the Society include *The Selborne Magazine*, which contains illustrated articles and notes, the Brent Valley Bird Sanctuary Committee, which gives advice on the attracting and protecting of birds sections which undertake rambles, lectures in London and the Provinces, a staff of lecturers who can be engaged by local societies, schools and educational bodies the granting of diplomas to teachers lecturers, and guides, the holding of examinations, conferences, and classes

The central offices are at 83 Avenue Chambers, London, W C 1

SELF AND SELF-CONSCIOUSNESS —The reality of the self is the most ultimate datum of conscious ness—the primary intuition We cannot get beyond it, for it is necessarily involved even in the attempt to do so The ultimate questions we can ask about the self do not concern its reality but its nature and its development Knowledge of this is of the greatest importance to all who are engaged in training the young for understanding of the self is the only clue to the understanding of others But it is not intuitive it is attained only as the result of careful study

The traditional psychology attempted to explain the individual self in isolation, and regarded the community as an aggregate of self sufficient units Modern thought attacks the problem from the other side It sees in each individual essentially a constituent of a society with the rest of which his relations are organic Into a certain community a child is born and in it he grows up This community is a psychical life having its purposes its views of good and bad wrong and right its estimates of the relative values of experiences and aims its knowledge of the world of men and of things Into its feelings the child enters by innate sympathy into its estimates of value he is led by example by precept and by authority into its ways of acting and thinking by unconscious assimulation and by conscious imitation Thus the whole texture of his psychical life is a concentration and reflexion of the life of the community of which he is as truly a constituent part as a cell is of an organic physical body At the same time he has from the beginning a certain definite characteristic trend due to his heritage from his forefathers and the study of heredity and variation increasingly emphasizes the importance of this inheritance This accounts for the fact that in similar social surroundings markedly different individualities are developed Yet, however great may be these divergences, each is seen as a variation from the type established in the particular community in which they develop Each individual represents the common life in his own way and each therefore is fitted to contribute his appropriate share to the common good

The coming to consciousness of the self as an individual is a progressive development of clearness and definiteness of purpose The self, determining its own ends stands out with increasing explicitness from the material and human surroundings in which it works Its relations to them are more exactly seen as experience brings home the consequences of acting thus and thus As the results of actions are foreseen, what is capable of achievement becomes more definitely marked off from what can merely be pictured in imagination, and so the means to attain purposes are more surely planned Throughout there is growth of intelligence, but only as one aspect of a life of directed purpose which is at the same time an active striving, finding satisfaction or dissatisfaction in the course of its activity Intelligence apprehends what is in accord with the common sentiment, and consequently sees where to expect to profit by public assistance or to enjoy public approbation and where, on the contrary, public opposition active or passive, may be anticipated The individual because he is an individual, may adopt aims not accepted as good by the community on the other hand because his nature is social his aims are always related to those which win public acquiescence

Characteristics of the Self. At first, apprehension of the self is very closely involved with that of the body for the beginnings of life are predominantly physical, intelligence and emotion can only take form as life itself calls them forth And always in ordinary thought and speech the self is at once body and spirit The distinction between these is the result of analytic thought directed on experience This makes clear to us that we as active agents can be set apart in thought from the circumstances in which we act though the separation not only cannot be made in fact but cannot even be thought as so made In thinking thus we assume that the self we so envisage is a continuing reality Bare perception of the present cannot give us this and cannot by itself justify the certitude that the self of the present moment is the self of even an hour ago As the reality of the self is an ultimate intuition so is its permanence Experience soon shows us that it is not an unchanging identity, in all apparent characteristics we are very different in adult life from what we were in infancy Nor can we appeal to explicit memory of the past even if to do so did not involve this very intuition, for definite memory will carry none of us back to the beginning of life The self then, is characterized by both permanence and change The past lives on in the present and gives it its effective force to work out the future, which we see in idea itself resting on experience It is because the past is thus taken up into the present that the self we find by introspection is a permanent self

It is also a unity, despite the multiplicity of its experiences For at each moment it is making for the attainment of some one end and as evaluation of experience becomes more exact the ends sought are progressively systematized The unity of the self, therefore is a dynamic unity which takes up into itself all its experiences so that they become one with it Especially important is this in so far as those experiences relate the self to other selves Neither can be known apart from the other, because neither is real apart from the other

When we examine the self we as it were construct from the real concrete self of life a representative and partially abstract self and so make evident its general character and tendency This concept of the self we can use for our practical guidance J WELTON

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SELF-EXPRESSION —A result of feeling excited by the thought of self and the display of an individual's own qualities or capacities in order that they may be observed by others The exhibition

of self is a natural impulse—sometimes spontaneous sometimes the results of reflection Its effects are important for it brings the character of an individual under the notice of others and leads to social recognition and response on their part Its higher forms are displayed in art and literature in which the works of the individual express his inner self

SELF-GOVERNMENT VERSUS PUNISHMENT IN SCHOOLS —It is reasonable to assume that punishment is never imposed upon any child except with the idea that it will be good for him Also that teachers would if it were possible obtain the results they desire by other methods if such could be found Punishment then is resorted to as a means of compulsion to right conduct This reduces the question to one of ethics The fact that punishment is the infliction of pain either physical or mental allows one to assume that fear is considered as a deterrent to bad and a wholesome stimulus to good conduct

But fear is always deadening to the moral sense The proof of this statement is not always apparent because surface results are obtained by creating a fear of punishment in the child s mind and it is only the deeper study of the analytic psychologist into submerged mental processes that discloses the deadly effect of fear

The true principles of moral education may be established by the analysis of a very simple problem that every mother has to solve in the nursery

The infant has become curious about the fire in the grate Curiosity is a craving for knowledge therefore it is good—always—whatever form it takes The child has gained most knowledge by touching and handling objects He wants to touch and handle the fire This is a wish and is dynamic Prevention of the fulfilment of the wish does not destroy the energy behind it but suppresses it and it becomes another kind of wish or it may become a cumulative craving to play with fire

Dealing with Innate Tendencies Either punishment or self government can be applied in this case

The self government mother will recognize the educational value of the child s wish She will carefully protect him from injury or excessive pain until he learns that fire burns if touched He is now self governing as regards fire He has no fear of fire but an intelligent caution This is knowledge He knows the truth about fire Later by the same wise methods his mother will teach him the destructive qualities of fire so that both his person and the house are safe

The punishment mother will spank him in order to teach him not to go near or touch the fire Her motive is also to protect him and prevent a conflagration She tries to destroy his curiosity about fire by inflicting pain By diligent and watchful practice of this educational method the child will acquire fear—not of fire because he does not know the truth about it but of his mother whose contact with him causes pain The fire and mother become associated The curiosity about fire is transformed into fear of the mother This fear inhibits the desire to touch fire *while the mother is present* But sooner or later the child finds fire in his environment without mother therefore without any inhibition by fear There is no knowledge or caution The many suppressed wishes to touch fire have accumulated into an intense craving If he recovers after his belated experiment he will know the truth about fire but will still fear his mother who now is more deeply associated with pain and suffering

Later in life the effects of punishment may be seen in the desire of the boy to smoke There is no innate desire for tobacco nor is there much curiosity But in spite of the nausea which resulted from the experiment and which being immediate should have made him self governing the desire persists This is an imposed craving and is the most difficult to deal with but even this is not immoral The craving is for freedom not tobacco Punishments have made the boy long to be grown up because adults are not spanked or sent to bed without supper He cannot be grown up except by process of time but he can dramatize being grown up Smoking is the privilege of adults and he imitates this peculiarity of grown up behaviour for the very reason that it is forbidden

The boy whose parents and teachers are not associated with pain and humiliation will accept from them as truth the plain statement that tobacco will injure the physical and mental development of growing boys He is then self governing concerning tobacco

It is unnecessary to continue this illustration of the relative effects of punishment and self government as methods in moral education into sex experiments and habits during adolescence The innate desires curiosity and the desire to dramatize freedom are all combined as a dynamic force

Dealing with the Desire for Knowledge Not only does the teacher have to deal with innate tendencies toward unwise conduct but he must also create a desire for knowledge of facts for which the child has no immediate need such as mathematics

The teacher who does not recognize mind as dynamic will try to compel this pupil to get mathematical facts into his mind by some form of punishment for failure But fear and mathematics will not mix except to the moral disadvantage of the pupil

If the cane is made a part of arithmetic the pupil will want arithmetic but his interest is in self preservation—not arithmetic He therefore takes the easiest means of producing the mathematical facts to the satisfaction of the authority who holds the cane He invents a crib Fear has turned his creative genius toward dishonest invention The man with the cane becomes constellated with mathematics Fear makes him hate both the man and his subject with disastrous moral and intellectual consequences Milder forms of punishment such as impositions or deprivation of privileges are no less serious in their results Competition turns the creative energy toward vanity or intellectual snobbery prizes toward greed and an obsession for possession Competition for prizes is only an indirect form of punishment

There are means of releasing the dynamics of mind from constellations and inhibitions so that the pupil will have an interest in all the truths of the universe Narrowness of interest or narrow mindedness is the result of the senseless imposition of fear upon the child in the nursery as well as in the school The passion for creating which is common to all human beings is the force behind all art and scientific research and social service It is also the force that fills the prisons and lunatic asylums but which has been perverted into crime and mental helplessness by fear in some form or other

Self-government leads to truth upon which goodness and a sense of beauty may be developed

It demands that social responsibility and an opportunity for social service be given the child from his nursery days on through life When the social consciousness becomes sufficiently developed during adolescence the actual organization of systematic government should be entrusted to school-children For love of one s fellow man is also dynamic and should be expressed in terms of love and service and mutual responsibility H L

SELF-HELP —The development of the personal individuality the self of every child is one of the highest aims of education The rational thinking ' self creates a fixed and dominating ideal towards which the individual strives and self activity is stimulated by the desire for knowledge and the power which it brings Education from without provides means self dependence one of man s finest attributes involving self reliance and self confidence enables the pupil to make use of the means to gratify the desire to carry out his own idea and to realize his ideal

SEMINARIES FOR YOUNG LADIES —The eighteenth century opened with scarcely any provision for educating girls and with very little idea that any was necessary Even the art of housekeeping with shorthand and arithmetic were gravely neglected one woman deplored If Little Gidding and Lucy Hutchinson are bright spots they are the exceptions which prove that the rule was to give no education Addison and Steele regretted that learning was not thought a proper ingredient in the education of a woman of quality or fortune that her most serious occupations were sewing and embroidery her greatest drudgery the preparation of jellies and sweetmeats though they acknowledged here and there one who would read on the Plurality of Worlds

The renewal of intercourse with the Continent quickened the attention of some thinkers prompting them to set forth new ideas Only one was a woman and Mary Astell s little book shows how limited were both attainments and aspirations (See ASTELL MARY) Defoe in his *Essay on Projects* summed up that a woman who could read and write stitch and make baubles was esteemed well educated He recommended French Italian music dancing history and conversation He appealed to mercantile classes while translations from Fénelon reached idler strata but however courtiers might bewail the lack of sprightly conversations in *salons* there was no attempt to give a knowledge of Italian and Spanish music and painting such as French ladies acquired

Another attempt to awaken public opinion was made by John Mitchell but he could not count on a knowledge of reading and advised oral teaching He advocated distinct schools with a curriculum planned for girls including languages arts sciences and accomplishments great stress was laid on the formation of character This too was the ideal of Thomson himself well educated and a tutor in noble families—

" To give society its highest taste
Well ordered home man's best delight to make
And by submissive wisdom modest skill
With every gentle care-eluding art
To raise the virtues animate the bliss
And sweeten all the toils of human life
This be the female dignity and praise "

Boarding Schools. No general action was taken, except for a few charity schools It was left to private enterprise and as there were no magazines to tell of successful attempts no rapid progress was made not till the middle of the century is there any sign of achievement Fordyce writing on education spares one brief chapter for the neglected sex He excludes outdoor occupations such as building ploughing gardening advises that a girl be sent to boarding school till the age of 8 to learn reading writing and French that then she should return home to be educated by her uncle ! His aversion from boarding schools was shared by Wesley who declared they were hotbeds of vice Fordyce s curriculum includes idiomatic English with attention to accent and enunciation, arithmetic and accounts music and dancing sewing designing for dress pictures chairs and furniture Nature study geography use of the globes In literature he commends Halifax s letter to his daughter Telemachus *The Spectator* and Rollin

A contemporary " Letter to a Lady ' shows that boarding schools taught reading writing working samplers dancing singing playing the harpsichord and spinet but cookery was neglected Education it says was unofficially completed by cards novels balls and assemblies Mothers felt their own defects, and were asking science French algebra, mathematics logic rhetoric metaphysics for their daughters But the letter writer protests, and would lay better foundations with a knowledge of household management and marketing spelling, arithmetic plain needlework he deprecates much reading but admits Pope Addison, and Tillotson

The Evidence of Lady Novelists All such books and pamphlets leave the impression that theory and practice were extremely different Nor does a diligent study of Fanny Burney, Jane Austen Charlotte Brontë and George Eliot throw much light on the real situation We gather that Mme d Arblay had no regular education that Southey s mother had attended only a dancing school, that a schoolmaster at Hartlebury in 1777 had neglected his own daughter, that Nancy Lammeter could stitch rhymes on a sampler but could subtract only with the help of actual coins We may surmise an influence from Huguenot immigrants with their seminaries and we are certain that the daughters of dissenting ministers often opened boarding schools If these grew visiting masters would be engaged for special subjects or a few pupils might be trained to help From a genuine Rebecca Sharp some family traditions as to two successful schools have been obtained

At one the young ladies were paired off, each newcomer being placed in charge of a " school-mother ' with whom she slept They wore low necked dresses with short puff sleeves even when marched out in charge of the mistress Exercises included calisthenics dancing, archery riding, and La Grasse music and drawing were the chief accomplishments The schooling was very thorough, rather than extensive yet it covered in history an acquaintance with Greece and Rome Egypt and Carthage with modern European languages (especially French) The training was largely linguistic great attention being given to purity of accent and the choice of words English French and Italian were the staples The utmost attention was paid to the formation of character and the study of the Bible was prominent Such were the characteristics

of the Midland school, whose most famous pupil was Marian Evans

Another was at Culcheth Hall near Manchester where a doctor and his wife received young ladies to educate He lectured on science, other masters came for mathematics, logic ancient and modern history Latin, and various modern languages At this seminary was a remarkable custom, whereby the elder pupils on Sunday morning walked along the canal to teach to the unkempt children of the Manchester slums reading writing and Bible stories after lunch on sandwiches and home-brewed beer they attended church and were driven back in coaches spending the evening in writing out the sermon or composing letters home A young lady, after schooldays here were over went home well-equipped intellectually with developed musical talent fully prepared for a life of culture and society, but knowing nothing to help her in a humdrum world where men earned money and women cooked or sewed The school year was divided into four quarters with only brief holidays and it would appear that the terms quoted were forty guineas at most

Two other pictures of the opening nineteenth century are preserved Dibdin in 1810 gave his ideas of what a young lady should read an abstract of the historical part of the Old Testament Doddridge Addison and others on Evidences Grotius on the truth of the Christian religion Prettyman on elements of Christian theology Secker on the Catechism Wilson on the Sacrament, sermons by Clarke Secker Sherlock Jortin Balguy and Blair Wilson on the Bible So far, it looks as if Dibdin had in view a seminary for the priesthood but the *Whole Duty of Man* is a concession to the laity while Gisborne s *Duties of Woman* and *The Ladies Calling* indicate that he was really contemplating young ladies For the education bestowed on the daughters of clergy at the borders of York and Westmorland we have a murky picture drawn by Charlotte Bronte deliberately brightened by Emma Jane Worboise

W T W

SENATUS ACADEMICUS —(See THEOLOGICAL EDUCATION AMONG NONCONFORMISTS)

SENECA, LUCIUS ANNAEUS (3 [?] B C –A D 65) He is best known as philosopher and moralist Born at Corduba (Cordova) he was early brought to Rome where his life was spent By Claudius he was banished to Sicily for eight years Subsequently he was appointed tutor to Nero attained to the consulship amassed great wealth and finally fell a victim to Nero s jealousy (A D 65)

He studied under Attalus and Sotion and became a devoted adherent of the Stoic creed His works include treatises on *Anger Benefits Clemency* (addressed to Nero) and the remarkable *Natural Questions*, which contains practically all the physical science known to antiquity The *Letters* to Lucilius 124 in number really lectures on morals and cognate topics contain most of his educational views These are expressed incidentally as maxims particularly in Nos 2 45 88 106 but similar remarks are scattered through his other works His principles cannot be presented as a system but his shrewd practical maxims often mere *obiter dicta* are possessed of intrinsic merit that has kept them alive

In early life he opened a school for noble youths, which was largely attended As tutor of Nero, he had unique practical experience So successful was he in gaining his pupil's attachment, that he remained, with Burrus his chief adviser during the golden quinquennium (A D 54–9)

Seneca anticipated a discovery which has become the keystone of modern psychology, mental processes are not detached faculties but " passion and reason are phases of the mind ' itself functioning Physical interests demand attention—we must not live *for* but we cannot live *without* the body Short easy exercises—running dumb bells jumping—will serve as relaxation , athletic training is bad Of studies the only liberal one is that which liberates from vice Tested thus grammar, music geometry are liberal only in name They are justifiable because they prepare the mind to receive virtue " Good man ' is a higher though simpler title than ' learned man ' For wrong ideals the pupils are in part, to blame they wish brain not heart cultivated Youth is the period for acquisition The first steps are the important ones Beware of indulgent methods witness the only child Example not precept, is the short and effective way One example of luxury or avarice is ruinous Teachers and tutors must be gentle else their pupils will reproduce their passion Do not go against the grain follow Nature else it is lost labour Everything is overdone philosophy itself We surfeit ourselves in the letters we learn not to live but to dispute A multitude of books merely distracts Be satisfied with as many as you can read The quality, not the number matters Some people upholster their houses with books just for ostentation Give me the man who knows one book thoroughly

Seneca saw clearly that the " chief end " of life is moral to which all else must be subordinated Education is a great instrument toward virtue One regrets that the author did not more fully explore its possibilities Many of his maxims have become proverbs ' Homines dum docent discunt Non vitae sed scholae discimus ' etc

J CLARKE

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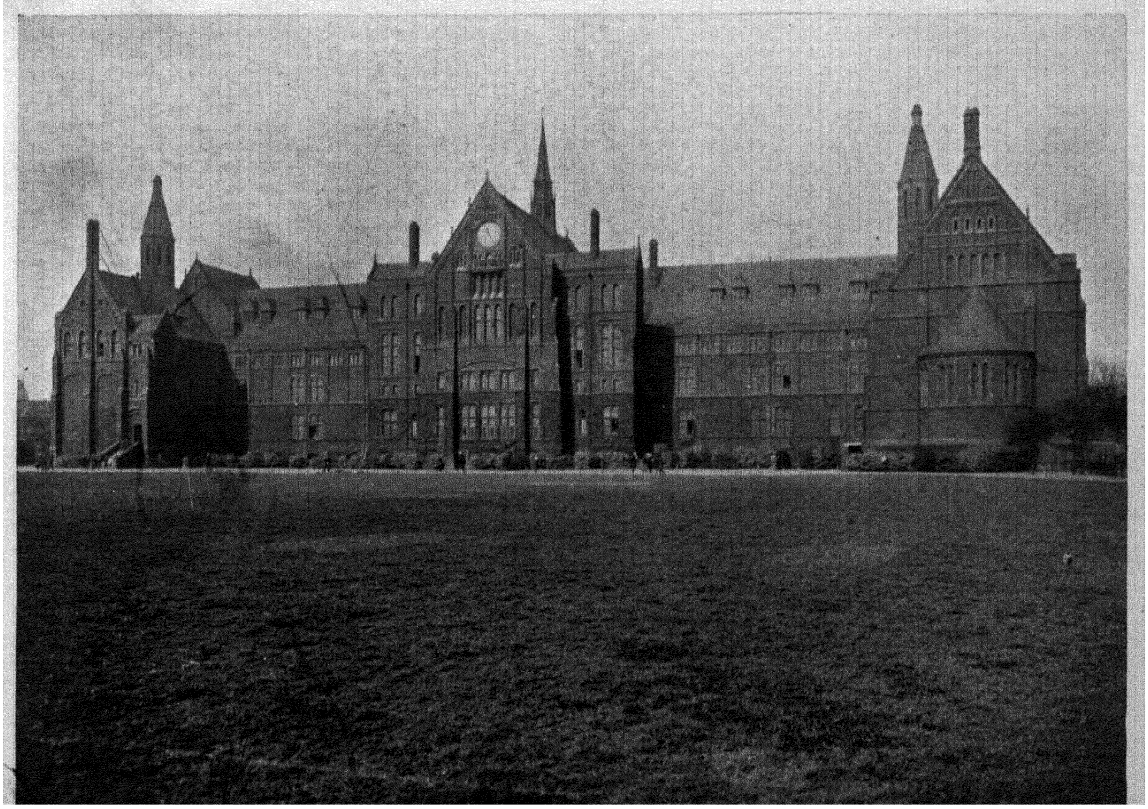
SENSATION —Our knowledge of things that happen in the external world is rendered possible and at the same time limited by our possession of means by which external forces are enabled to stimulate nerves leading from the surface of our bodies to our brains Although nerves themselves are capable of stimulation so that ' impulses are sent along them by comparatively weak agencies such as a slight tap it is necessary for our welfare that we should be able to appreciate much more minute sources of action upon us In point of fact the smallest amount of energy of light to which the eye is sensitive appears to be just about the value of the so-called " quantum ' of energy that is the smallest possible amount beyond which it appears to be indivisible so far as concerns the particular radiation concerned Thus the eye is as sensitive as it can be What we find then is that methods are provided by which the effects of these minute amounts of action are magnified as it were, so as to be great enough to stimulate the fibres of nerves All that we know of the nature of the



Saltley Training College



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St Paul's School

PLATE LXXXIII

process which passes along nerves when they are stimulated shows that it is the same in all kinds of nerves the same in the nerve from the eye as in that from the ear When these impulses reach the nerve centres in the brain they are redistributed analysed and grouped again by connection with various nerve cells and this process is in some way associated with what appears in consciousness as a particular sensation It is to be noted that the phenomena in the nerve centres are of a fundamentally different kind from those of consciousness so that it is impossible to express the one in terms of the other It is what happens in the *brain* that makes the difference between a sensation of light and one of sound there is no difference between the processes in the optic and auditory nerves In whatever way the nerve from a particular organ of sense is stimulated the sensation is that belonging to that particular external influence to which the sensibility of this organ is adapted This has been shown clearly by such a fact as that section of the optic nerve produces a sensation of light and better still by the case of one of the nerves of taste which passes through the middle ear in such a situation as to be sometimes accessible to the application of stimuli of various kinds Pressure electrical shocks application of salt or of heat equally result in a sensation of taste not in any way similar to the exciting agent used This circumstance is expressed in what is sometimes called Muller's law of the specific sense energies but Sir Charles Bell had previously stated it in a somewhat less complete form Since any particular organ of sense is arranged to respond to a very weak stimulus of a certain kind only it is clear that not only will this stimulus be ineffective when applied to the nerve itself but it will equally be useless for the stimulation of a different sense-organ or receptor as these may be named for convenience since this receptor is adapted to magnify another kind of external stimulus For example there are certain spots in the skin which give a sensation of heat when a warm body is applied others which give a sensation of cold when a cold body is applied But a body just warm enough to affect the heat spots has no effect on the cold spots On the other hand an electrical stimulus strong enough to stimulate a heat spot is also able to stimulate a cold spot or any other kind of receptor When it does so the sensation evoked is always the special one of the receptor in question It seems probable that the strong stimulus may be merely acting upon the nerve itself

The Mechanism of Sensation The mechanism in general may be illustrated by the practice of the physicist who frequently converts the various kinds of energy into the electrical form for the purpose of detecting or measuring them Thus mechanical motion of the steam engine may drive a dynamo sound waves are converted into electrical currents by the telephone heat by the thermopile light by a photo electric cell chemical energy by an ordinary primary battery and so on All forms appear as electrical current just as when applied to an appropriate receptor organ they appear as nerve impulses—all of the same kind A ray of light falling on a telephone does not affect the instrument nor does it evoke a sensation of sound when it falls on the acoustic receptors of the ear Further it is a common practice to magnify a very small amount of energy by a device in which it is made to close a circuit in which an independent source of current is thus allowed to flow and so produce a much larger effect a 'relay' as it is called In this kind of way the electric waves of wireless telegraphy are detected The organs of special sense are analogous to relays There is however one important form of sensation which is not subject to this intensification The sense of pain produced by injury appears to be due to stimulation of the actual nerve fibres themselves without the provision of an organ to increase the effect of the stimulus To affect these nerve fibres directly requires as we have seen comparatively intense stimuli and the meaning is obvious Influences which are not harmful to an organism must not be allowed to produce pain where is really noxious actions necessitate a powerful reaction Accordingly as Sherrington has shown such nociceptive reflexes overpower or inhibit simultaneous reflexes of other kinds so far as the lower centres of the spinal cord are concerned It is interesting to note on the other hand that even nociceptive reflexes can be inhibited from the higher centres of the brain

Extero- and Intero-ceptors The information conveyed to the brain by means of the sense receptors may refer to occurrences in the outer world or to those taking place in parts of the organism itself We have extero ceptors and intero-ceptors Of the latter class those known as proprio-ceptors have special importance By their means for example the brain is informed whether a particular muscle to which messages have been sent has responded in the correct way The extero-ceptors consist of two groups according as the object which stimulates them must necessarily come into actual contact with the sense organ in order that this may be affected or according to whether objects at a distance are appreciated Touch and taste belong to the former group the eye and the ear and also the receptors for odours belong to the latter group It is these distance receptors that have played the chief part in the mental evolution of mankind and it is in relation to their connections in the brain that the growth of the highest centres of the cerebral cortex has taken place in the process of animal evolution

The old division of the senses into five must be extended We can distinguish receptor organs for pain touch taste smell heat cold light sound the position of the body in relation to the direction of gravity and for the movement of the body in the three dimensions of space Various means are adopted for enabling the different forms of external energy to stimulate the nerve fibres Touch pain the sense of direction and in all probability sound result from mechanical pressure brought about by appropriate kinds of intensifiers Taste and smell are clearly chemical effects Light undoubtedly causes chemical changes in one or more substances contained in the retina and capable of being affected by the vibrations of the ether such photo-chemical substances as those in photographic plates are familiar to all It is possible that heat and cold may be appreciated owing to their influence on some chemical reaction which is very sensitive to temperature but this is at present hypothetical It will be obvious that there are external forms of energy for which we have no appropriate receptors the vibrations of the ether which constitute radiant energy are only perceived as light through a limited

range It is quite possible moreover that there may be forms of energy whose existence is unknown to us W M B

SENSE ORGANS AND THE NERVOUS SYSTEM —(See NERVOUS SYSTEM AND EDUCATION THE)

SENSE-TRAINING — The term sense training implies imperfect psychology We do not train the senses it by that we mean the organs of sense It is only nervous matter that can be trained because in the highly organized human body it is only nervous matter that *remembers* (*i e* that is so modified by use that it responds to later stimuli not only with more or less vigour but in a different way That is the essential point—even a muscle responds in a different way (*i e* more vigorously or less) after use but there is no difference in kind it simply contracts or becomes flaccid So far then as the senses depend on the muscular or vascular portions of the sense organs it is certain that they cannot be trained

There is however nervous matter in every sense organ and if it could be trained we might truly speak of training the sense organs But this nervous matter is only the ends of the fibres of the nerve cells along which the messages pass to the central system and these nerve fibres cannot be trained because unlike the central nervous matter they are not modified by use It is indeed essential that they shall transmit the message of the moment exactly as it is received and wholly uninfluenced by the messages which preceded it The telescope would be of no use if the rays it transmitted to the eye depended not alone on what it was pointed at but also on what it had been pointed it in the past It is the man behind the telescope whose interpretation of what he sees must be modified by his past experiences who must be trained

Nature arranges for this through the repair of the waste matter When a discharge passes along a nerve path some of the nervous material is used up The waste matter is carried off by the blood supply which also carries new material to the nerve to replace that which has been used up In repairing the central nervous system the structure and arrangement of the nerves over which the discharge has passed are altered so that they respond in a different way when the same or a similar stimulus passes over them next time Therein lies the strange secret of organic life for these alterations of structure are in normal circumstances such as to secure that the response is changed in the direction of greater well being for the organism But when the discharge passes along the nerve fibre from the sense organ to the central system the waste material is replaced in such a way as to leave the nerve fibre unchanged Thus even the nervous material of the sense-organ can not be trained What we call sense training is therefore really brain training and the problem of sense training is that of finding how the brain can best be trained to interpret the messages which are sent by the organs of sense

Is Formal Training Possible? The most important question we can ask relates to what is known as formal training Can we do anything to improve the general power of observation or is the improvement due to practice in one direction entirely limited to that direction? Experience proves what the above theory suggests that since what we mean by training the sense organs is really improving the power of the brain to interpret the messages it receives from the organ we must expect this training to be specific rather than general The physician who has become extraordinarily quick to observe and interpret the slightest changes in his patient will be helpless if asked to interpret the tracks which the Red Indian reads without effort —and *vice versa* though their sense organs may be equally good Or to take another example suppose A knows French but is not very keen of hearing while B who does not know French is When both listen to a Frenchman A's ears send less distinct messages to the brain than do B's but while A if he attends carefully can hear every vowel and consonant distinctly B can make nothing of it

It is therefore abundantly clear that special aptitude in sense interpretation in a particular field requires special training in that field But it is not shown that the special aptitude is not built on a general foundation which may be trained apart from the special activity And the physiological principles on which sense training depends indicates that this is probable For just as the telescope has to be moved by hand so as to follow the object at which we are looking so in every adjustment of the eye or other sense organ the muscles must be used to adjust the eye—to alter its direction or its focus or both And just as steadiness in moving the telescope comes only with practice—and just as steadiness in moving it to follow a bird on the wing will be carried over to give steadiness in following any other object—so our physiological knowledge would lead us to expect with the eye Similarly in regard to attention We should expect that the power of concentrating attention on the message conveyed by one or more of the many nerve fibres from the eye when acquired in connection with one kind of object would help us to *discriminate* the messages sent by those nerve fibres when dealing with another kind although we should not expect it to help us in interpreting the other messages For it is evident that the power of discriminating the messages sent along sensory fibres is only to be acquired by practice just as is the power of adjusting the motor impulses along the different motor fibres

The conclusion seems to be that this discrimination should be acquired by sense training in early childhood while interpretation is a later specialization E P C

SENSES AS CONTRIBUTORS OF MATERIAL FOR INTELLECTUAL DEVELOPMENT, THE — Each of our sense departments consists of an apparatus of greater or less complexity which is attuned to or adapted for the perception of a particular aspect or portion of reality The amount of information we gain from each department depends upon (1) The delicacy and responsiveness of the sensory apparatus itself (2) the degree of attention given to the sensory *data* (3) the significance which these *data* possess for us in virtue of their associative connections

As regards the comparatively undifferentiated sensations from the interior of the body it is manifest that they influence consciousness far more on the affective and emotional than on the intellectual side Biologically they are important enough as giving rise to life preserving activities (*e g* hunger and thirst) but they afford us little

knowledge in the strict sense Yet cases of widespread visceral anaesthesia have shown that the sensations from the interior of the body do sometimes play a more important part on the purely cognitive side of consciousness than is often suspected Thus it is probable that the constant background of consciousness afforded by these ever present sensations constitutes an important factor in the consciousness of Self while the periodicity of many of these sensations has been shown to be of use in the appreciation of time

Equally important biologically are the sensations from the muscles joints and tendons by means of which we appreciate the movements and positions of our own body Though they contribute but little to exact knowledge their abolition or impairment causes loss of control over our movements further their co ordination with sensations of touch and of vision is involved in all the more complex motor activities and the importance of their training in this respect is becoming increasingly recognized by modern educationists

As regards sensations from the outer surface of the body modern research has demonstrated the existence of complicated systems of sense organs some of greater and some of lesser delicacy There is still some disagreement as to the precise details of these systems but it seems fairly certain that the elementary qualities of cutaneous sensation—pressure pain heat and cold—are each of them found in at least two systems one of a coarser nature giving rough qualitative information only and influencing consciousness in a predominantly affective manner the other providing sensations delicately graded according to the intensity of the stimulus and being predominantly cognitive in function The former system provides information of great biological utility but of a vague and comparatively undifferentiated character The more delicate system is of great importance for the appreciation of the size shape texture etc of objects as well as for the execution of movements involving dexterity the important part such sensations may play in education has been increasingly realized of recent years

As regards the chemical senses of taste and smell there is no doubt that the latter at any rate has played an important part in mental development at the infra human stage but that in the human race it has suffered very considerable degeneration In many animals (*e g* the dog) smell is the most important cognitive sense as is clear both from the behaviour of these animals and from their relatively enormous development of the olfactory area of the brain Since odours are to be found in greatest intensity and variety in close proximity to the surface of the earth the decay of smell in the human race is probably connected with the assumption of the upright posture which has produced a mode of life less suited to the exercise of smell and more favourable to that of hearing and vision

Hearing and vision derive their chief biological importance from the fact that they enable their possessor to become aware of objects at a distance from his own body and thus to seek or to avoid them as occasion may require They are the predominantly cognitive senses in man and by means of all three of the factors mentioned at the beginning contribute more to knowledge than any of the other senses Vision is especially important as the sense through which our ideas of the external world (*i e* space and size shape position, and movements of the objects occupying it) are chiefly formed Hearing and vision are further the normal channels through which we become possessed of the inheritance of human culture through the connection of the former with spoken and of the latter with written language

We may note finally three facts of general importance in connection with our subject—

1 As regards the acquisition of human culture it is possible to use effectually a sense other than that generally employed for a given purpose as is shown by the congenitally blind or deaf and (still more markedly) by the well known cases of Laura Bridgmann and Helen Keller

2 There exists a tendency towards an inverse correspondence between the affective and the cognitive value of the different senses

3 Much of our most important knowledge is acquired not exclusively through any one sense but by means of a co ordination of sensory *data* from two or more sense departments J C F

SENTIMENTS —The abstract sentiments are described by Sully as the highest group of emotions They are mental or internal feelings and may be divided into Contemplative and Practical By the faculty of Reflex Perception or Self Consciousness, we become aware of our internal states that is, that we live We are conscious of our life so long as we are conscious of activity and change of state thus pleasure is the consciousness of a vigorous and unimpeded energy and pain is the consciousness of a repressed or impeded tendency to action Tedium is a result of repressed activity and sometimes becomes so oppressive as to lead to suicide or madness while in the opposite direction the too rapid change of perceptions and thoughts leads to giddiness or vertigo confusion and stupefaction Other sentiments accompany the energies of imagination The Intellectual sentiments accompany intellectual processes and lead to a love of knowledge and truth Surprise and wonder are the earliest emotions distinctly manifested by a child Curiosity and desire for knowledge develop later and prompt the pursuit of knowledge The Aesthetic sentiment produces the pleasurable feeling which accompanies the perception of the beautiful the humorous and the ridiculous The Moral or Ethical sentiment is attached to the idea of right or duty is often spoken of as the 'sense of duty and conscience is its most important manifestation

SERBIA, THE EDUCATIONAL SYSTEM OF —This is under the direction of the Ministry of Public Instruction The annual budget of the Ministry in 1900 was only 3 000 000 francs (£120 000) in 1914 it was 14 504 336 francs (£580 000) in 1920, for Serbia (with Montenegro) it was 67 808 852 85 francs (£1 256 000)

Primary Education In 1830 there were but 10 primary schools in the whole of Serbia in 1836 there were 72 in 1846 213 in 1855 more than 300 in 1885 534 in 1903 1 263 in 1911 1 425 and to day the number is 2 129 or (as many schools are double or triple under the same headmaster and administration) 4 015

There are three kinds of primary school Infants Schools Primary Schools, properly so called and High Primary Schools The first chiefly found in the towns are attended by children of from 4 to 6 who learn reading and writing Primary schools,

properly so called are found in towns and villages, and are attended by children of from 6 to 10 They have four classes Instruction is given in religion grammar the ancient Slavonic tongue geography history arithmetic geometry natural history the elements of husbandry (or housework for girls) drawing singing and gymnastics High primary schools are chiefly found in small provincial towns They are attended by boys and girls after leaving the primary school for two or three years according to local conditions The teaching is largely agronomic commercial or industrial These extended schools date from 1898 Their number is nine Besides there are seven schools of housework for girls

Recently schools have been started for illiterate peasants An excellent Serbian reading book used for self teaching has had a remarkable success thanks to the fact that Serbian spelling being absolutely phonetic is the simplest in the world The number of these schools for illiterate people is 158

Secondary Education has also made great progress The first college founded in 1808 was suspended in 1813 but reopened in 1830 at that time it was the only one In 1839 there were five To day Belgrade alone has more than the whole of Serbia had in 1839 In all there are 52 State colleges namely Complete colleges (8 classes) at Belgrade (8 colleges) Kragujevac (3 colleges) Zaječar Niš Požarevac Užice Krusevac Valjevo Skoplje (Uskub) and Bitolj (Monastir) Šabac Smederevo Jagodina Čačak Leskovac Pirot Kumanovo Priština Incomplete colleges (6 classes) at Vranja Negotin and Veles Loznica Cuprija G Milanovac Prokuplje Štip Tetovo Prilep Prijepolje Novi Pazar Injilane Iradište Kujaževac Aleksinac Incomplete colleges (4 classes) at Paraćin Kraljevo Gjevgjelija Prizren and Mitrovica Kavadar Strumica Arangjelovac Rača Svilajenac and Complete colleges for young girls at Belgrade Kragujevac Šabac Niš and Valjevo There are also private colleges at Belgrade and elsewhere

In 1830 the educational system was classical but little by little it changed completely and became eminently modern and national The subjects taught are religion the national language and literature the Old Slavonic language Latin (after the third class) French (after the first) Russian (after the seventh) German (after the fifth) geography national and general history natural science mathematics elementary philosophy drawing singing gymnastics and military training Examinations take place at the end of the fourth class (Lower Proficiency Test) and eighth (Baccalaureate)

In teaching foreign languages for which the Serbs have a special aptitude many practical methods are used reading aloud in class illustrated object lessons continuous conversation the reading of books in the foreign language The number of French books read in the higher classes thanks to this system varies from ten to fifty per pupil The course of national geography and history is a school of national education and is supplemented by numerous excursions and tours of entire classes in Serbia and Serb countries (Bosnia Montenegro etc) The natural science course is also completed by frequent excursions Military training and gymnastics are much appreciated by the students who have private societies (Soko Clubs) for their cultivation The text books for all these subjects are small clear, and practical

There are training colleges for teachers at Belgrade Skoplje Kragujevac Jagodina Aleksinac and Negotin beside the pedagogic high classes in principal secondary schools theological seminaries at Belgrade and Prizren commercial schools at Belgrade Skoplje and Bitolj agricultural schools at Sabac Kraljevo and Negotin and the School of Arts and Crafts the School of Singing and Music etc at the capital

Higher Education and the Universities Higher education dates from 1838 when under the name of Lyceum the faculties of letters and Science were founded to which were added in 1841 that of law and in 1846 the Technical School In 1863 it was entirely reorganized and adopted the name of High School it was formed into a University in 1905

The present University in Belgrade has five faculties philosophy jurisprudence applied science theology and medicine The faculty of philosophy includes literature and science Slavonic philology is represented in it by two professors for the national language and two for the national literature and one tutor for the Slav languages and literatures in general Comparative literature classical philology Romance philology and Teutonic philology are each represented by two professors or tutors The Chair of English and English Literature is occupied by an Englishman There is a special Chair of Byzantology another for the Roman antiquities of the country one for mediaeval Serbian art history and one for pre historic subjects National geography and ethnography are represented by four professors and tutors national history by two general history by three etc In the faculty of law there is amongst others a Chair of Slavonic Law The faculty of applied science is organized on the model of the polytechnics The faculties of theology and medicine which were founded by the Act of 1905 started last year (1920) The course of university study lasts for four years the degrees of Licentiate Doctorate Engineer and Architect being granted

The teaching staff numbers 126 It is concerned not only in scientific but also in pedagogic labours With this end in view it has organized in co operation with the staff of the colleges several societies with scientific and pedagogic aims such as the Society of Serbian Language and Literature the Mathematicians Club, the Geographical Society etc The Belgrade University has received such an impulse that no other university in the Balkan States can be compared with it

There have been before the war 1 600 students in 1900 there were only 415 at the present moment there are about 4 000 They are generally speaking very industrious and often pass very severe examinations brilliantly Preparations are being made for creating a popular University Besides there are the Faculty of Literature at Skoplje and a Faculty of Law at Subotica They both had a beginning in 1920 The teaching staff of the former numbers eight the staff of the latter seven

Finally two remarks may perhaps not be superfluous

1 When the educational system in Serbia is spoken of it must not be forgotten that it is not

Serbia alone where education is in the Serbian language All the Serbian or Southern Slav provinces—Montenegro Bosnia Dalmatia, Southern Hungary Croatia Istria the Slovene countries —render their teaching in the same tongue Zagreb (Agram) in Croatia has a University carried on in the Croat language which is the same as Serbian

2 In speaking of the educational system in Serbia as actually carried on at the present time the ravages suffered in the Great War must be remembered Many village schools were burned down and colleges shelled and the Belgrade University was destroyed by Austrian bombardment in the opening days of the war (now rebuilt and enlarged) Destroyed also were the fine University library the chemical laboratory the physical laboratory etc A large number of elementary schoolmasters and several college masters perished on the battlefields The teaching body of the University also mourns its war victims As for the undergraduates a marble tablet erected in 1913—now shattered—in the Hall of the University bore the names of thirty students who had found heroes deaths in the battles of Kumanovo Bitolj Adrianople and Bregalnica At the close of the year 1914 fifty students fell gallantly on the battlefield of Suvobor while repelling the Austrian invasion In the three bloody battles at the end of 1915 and many other battles in 1916 1917 1918 a far larger number met the same fate in defence of their ruined Fatherland Upon their tombs —in the words of the great Serbian national poet— let us hope there will blossom flowers that will bear a fragrance to generations yet undreamed of P Popovic

SERBIAN, THE TEACHING OF —Success in teaching languages depends particularly on the method adopted The best method is that which takes *reading* for its basis if this is followed it is possible to learn Serbian (which is a difficult language) in about *one year* so far as to permit the student to understand the written and spoken language passably and even with some small supplementary instruction to speak it a little himself

Method The *reader* should be a book of not too difficult tales which exists both in English and in Serbian (in the absence of a specially arranged book the Bible the *Vicar of Wakefield* etc will do) Contrary to custom the teacher will place both texts the Serbian and the English in the students hands After having taught the Serbian alphabet and the first elements of pronunciation (which will take very little time as the Serbian alphabet is absolutely phonetic and the sounds of the Serbian language present scarcely any difficulties to the English) the teacher can proceed at once to reading and translating the reader a more timorous teacher might precede the reading by dictating to the students a small selection of representative paradigms of Serbian grammar (the paradigm of the first feminine declension of the first masculine declension of the definite adjective of the personal pronoun and of the present past future and conditional of the verb *pitati*) These he will make them write out in their note books without insisting on their memorizing them at once in the beginning the paradigms ought to serve principally as references

For about twenty lessons the teacher will read the text to the class and translate it phrase by phrase and word by word into the *most desirable* dog English limiting his comments to a few explanations indispensable for the comprehension of the text and causing the students to mark the accents in their readers During all this time the students will play a purely passive part, and confine themselves to following the reading and translation of their teacher in their own books By listening they learn spontaneously, thanks to the frequent repetition of the important elements of the text the pronunciation the grammatical forms the meaning of the words and the phraseology of the Serbian language After having thus read and translated some hundred pages, the teacher will take his class back to the beginning of the book and it will now be the students turn to read and translate the teacher correcting their mistakes *without insisting too much upon them* About ten lessons approximately should suffice for this repetition

After this the teacher may according to circumstances from time to time resume the *rôle* of translator for one or two lessons or half lessons but the active part will have passed into the students hands and they prepare each successive lesson at home from the English translation and the Serbian text This goes on until they have gone through the reader after which it is taken again in the same way The second reading usually goes very quickly the text being now familiar the interest lively and emulation very keen Of course the more industrious or more intelligent students should have full liberty to go quicker than the rest the method permits the more backward to follow their classmates translation not only without disadvantage but with profit Parallel with this second reading the study of the grammar will commence which the students will learn with less effort more rapidly and better and this study will be continued during the translation of a second reader This will finish the programme About one year suffices to carry out this programme in full

From this moment the students may be considered to have completed their school apprentice ship They are of course far from knowing the thousand things that constitute the perfect knowledge of the language but they will have acquired a knowledge which will permit them to draw profit from it at once and to make rapid progress in the future—by frequenting the society of Serbians visiting Serbian countries and above all things *by much reading*

As to the spoken language for one who understands a written foreign tongue fairly well the transition from the "passive" employment to the "active employment of it is comparatively easy For Serbian whose pronunciation is simple a short period will suffice to render a student who understands the language capable of expressing himself by word of mouth and consequently also in writing

B Popovitch

SESSIONS, LENGTH OF —The school day is usually divided into two parts called sessions The morning session generally lasts three hours and the afternoon session two to two and a half hours A variation is made in the case of infants for whom the minimum of an hour and a half is prescribed and in infants' schools the afternoon session is usually limited to two hours The interval between the sessions varies from one and a half to two hours and is, to some extent regulated by

considerations of meals and the distance children travel to and from their homes The Elementary School Code requires a short break of ten or fifteen minutes in each session and despite experiments in some higher schools does not encourage the holding of continuous sessions of more than three hours without a long interval The longer sessions in higher schools are broken up by more frequent intervals for games and physical training

SETTLEMENTS, EDUCATIONAL —The university and similar settlements in England of which Toynbee Hall was the first have always included education in their programme In one or two cases it has been highly developed but in most instances as will be apparent from the account of their work given in the article under that heading their activities have become predominantly social The growth during the last twenty years of the adult education movement in its various forms revealed the need of something like the familiar settlement but more concentrated in its aims and depending for its success rather upon evoking the resources of the people in the neighbourhood than upon bringing a group from elsewhere to assume the chief responsibility for the efforts made

Thus the establishment in 1909 of St Mary's York and in 1914 of Beechcroft Birkenhead and Lemington on Tyne Settlement marked the rise of a new type best described in a paragraph taken from a recent Beechcroft publication It is a non residential centre for the higher education of adults It exists to create a wide fellowship and interchange of ideas between all who are anxious for the betterment of society It is a community centre a club and a people's college and it bases its appeal on the ideal and spiritual All movements which seek to increase the mental and spiritual treasures of men and women have its aid and it endeavours to do positive and constructive work in aiding men and women to fit themselves for life in all its relationships for active and intelligent citizenship and generally to develop the precious gift of personality with all its potentialities for the individual and the race

It should be remarked that some of the educational settlements are residential but in most cases only the warden lives on the premises if anybody does Again some do more direct social work than others But the characteristic that distinguishes those affiliated to the Educational Settlements Association from the other group is their primary emphasis on education The two groups have much in common and work in close co operation Some settlements are affiliated to both Associations The majority of those which are connected with the I S A however are of recent origin At the time of writing the number has reached fourteen and is rapidly increasing

Aims of the Settlements Initiated in various districts throughout the country by various organizations the purpose of each settlement is to afford a home and common meeting ground for all the local activities of a definitely educational character while leaving to each co operating body its necessary freedom The W I A and the Plebs League the Adult School and the University Extension Committee the Women's Institute and the National Home Reading Union will be found working side by side in an educational settlement Musical dramatic and literary societies regional survey associations and teachers' clubs meet there Where there are gaps in the local provision for the needs of adult students the settlement seeks to fill them by arranging terminal courses of lectures study and discussion groups and so forth While not desiring to cater for mere recreation as such the settlement tries to meet the needs of those who are not inclined for the three years consecutive study of a subject demanded by a tutorial class and to interpret education in the broadest sense while always maintaining a very high standard

Thus an average programme will be found to contain a completely graduated series of activities including university tutorial classes and extension lectures one year classes lecture classes discussion groups miscellaneous lectures regional survey dramatic societies (often carrying on a complete little theatre) orchestral and choral societies handicrafts hobby and rambling clubs folk dancing and eurhythmics fellowship groups and adult schools Though the premises may be of the simplest the decoration is intended to be in itself educative as to possibilities in colour and design There is a social life that springs out of the common pursuit by many paths and with differing emphases of one goal Each settlement is quite independent in policy and finance

It is democratic in its form of government and most settlements find the Students Guild an invaluable part of their organization Co operation with local education authorities and with extra mural departments of universities is becoming increasingly close and the settlement offers an excellent means of enabling the official and the voluntary elements both necessary in adult education to work together On the other hand such centres have an appeal to ordinary people which makes each veritably what one at Bristol has happily named itself The Folkhouse

Fircroft Birmingham and the College for Working Women Beckenham each provides a full year's residential course of a cultural character for working men and women respectively and are akin to the Danish People's High Schools Woodbrooke Birmingham provides residential courses intended especially for those who intend taking up social or educational work as a vocation The fact that these three centres are all affiliated to the E S A makes the range of work that comes within the field of the Association complete Nor is the international aspect of things forgotten It is a matter of keen interest in all the educational settlements Through lectures and discussions visits to other countries by groups of students at holiday times the interchange of students with similar organizations in other lands and of course affiliation to the World Association for Adult Education international relationships are steadily fostered

The London office of the Educational Settlements Association is at 30 Bloomsbury Street W C 1 and the York office is at 17 Spurriergate The Honorary Secretaries are always ready by correspondence interviews or visits to afford information and to assist in any way possible the promotion of fresh experiments of the kind described above

B A Y

SEVENTEENTH CENTURY, EDUCATION IN ENGLAND IN THE —Development in the seventeenth century was distinguished by its puritanic

basis whereby the schools became largely the reflex of the national life This basis associated the schools with the teaching of the classics partly as a tradition from the Middle Ages, and partly from the rejuvenating influence of the Renaissance but above all from the recognition of Latin Greek and Hebrew as the holy languages Whilst the Puritan religion of England consisted of visualization of the old Hebraic experiences as directed by God transferred to the needs of an England—which would be at its best if assimilating itself to the past of Palestine—it was inevitably historical in its outlook Visualization of past and present from the theological standpoint prepared the ground for the pedagogical doctrine of realist instruction Bacon's appeal to observation and experiment—in other words to individual sense perception and exercise of active judgment upon it—was applied to educational theory by none more zealously than by Puritans Comenius and Dury on to Locke Thus Puritans developed classicism of ancient book knowledge because their religion was founded on one book and that the Bible (and incidentally their literary interest extended to the languages and literature which threw light on it or illustrated it in any degree) The mysticism of the Middle Ages was in the Puritan joined with an interest in the external world as consisting of sense experiences from the creatures of God intended for man's special service This aspect is particularly evident in text books such as those of Hezekiah Woodward But not only in school text books but also in sermons and essays appeals to sense observations are increasingly frequent with a view it is true ordinarily to moralize from the observed aspect of physical objects and animal life

Puritanism and Science At any rate relatively to past ages Puritans afforded good ground for the new realism of Bacon and his followers In course of time from Puritan stock came the scientists such as John Ray and Sir Isaac Newton In science the most noteworthy event institutionally in the seventeenth century was the foundation of the Royal Society and a study of the pioneers of scientific progress in the seventeenth and eighteenth centuries would show the debt of natural science to the Puritan characteristic witness of patient seriousness and cultivated realism

Development of Modern Subjects in Seventeenth Century History Apart from direct services to science which were not evident with the school work or in the universities of the earlier half of the seventeenth century it is to be noted that tendencies towards a development of modern subjects were to be found in the grammar schools in the classical text books themselves Thus the teaching of modern history was indirectly touched upon by the practice of seeking examples for illustration in the Latin compositions Erasmus's *Adages* and *Apophthegms* and his *de Copia* initiated the anecdotal and incidental side of historical interest The Erasmian practice of referring to current events was followed by later humanists Alexander Ross who completed Raleigh's *History of the World* Richard Knolles who wrote a *History of the Ottoman Turks* and John Langley 'historian cosmographer and antiquary were all masters of grammar schools But history was mainly a subject of home education in aristocratic families in readings from the old folios and in Puritan times the mothers (like Mrs Wallington) were very ripe and perfect in all stories of the Bible likewise in all the stories of the Martyrs and well seen in the English Chronicles The home-education in the better Puritan families is of high importance in the seventeenth century (See WOMEN HISTORY OF THE EDUCATION OF)

Geography Modern geography began with the Tudors and is mentioned first in connection with Bristol Grammar School Richard Hakluyt who took his M A at Oxford in 1577 states that he was the first to show the newly reformed maps globes spheres and other instruments for demonstration in the common schools of Oxford and in *Reformed School* (1650) John Dury requires an outline of geography to be taught in schools In 1621–1628 Westminster School boys of the Fourth and Seventh Forms were instructed in Hunter's *Cosmographie* and practised in finding out cities and countries in the maps

English The English language was studied only in connection with Latin In 1654 Richard Lloyd devoted one section of his *Schoole masters Auxiliaries* to teaching to read and write English dexterously whilst William Walker in 1670 put English and Latin idioms in parallel rows for comparison The teaching of English literature began in the illustrative passages of English in books on Rhetoric This practice of illustrations from contemporary writers in Latin written text books is to be traced back to Peter Ramus (1515–1575) In 1657 Joshua Poole produced his *English Parnassus* a remarkable collection of the choicest English epithets and phrases gathered from the best English poets This book showed how closely the best English literature had been analysed and what an amount of subject matter was available for literature teaching Natural history was only taught as affording illustrative matter for composition

Modern Languages In the teaching of French the first well circulated book was Claude Holyband's *French Schoolmaster* (*c* 1565) followed in 1578 by John Florio's *First Fruits* for Italian de Corvo's *Spanish Grammar* was translated into English by John Thorius in 1590 Henry Hexham published a *Dutch grammar* in 1660 and a German grammar for English pupils was not published apparently till 1680 By the end of the seventeenth century every important department of knowledge then known was to be found in an English text book Accordingly the old need of Latin as the one language for the best text books in all subjects was removed and the way opened for English as opposed to Latin schools Since the grammar schools were schools in which speaking generally classical subjects alone were taught the need for instruction in other subjects led to the establishment of private schools of a specialist nature

Mathematics Thus in Queen Elizabeth's reign separate schools arose for the teaching of arithmetic (which the grammar schools did not admit to be part of the recognized curriculum) The first known prospectus of a private school is that of Humphrey Baker in 1562 for arithmetic and other similar arts In the first half of the seventeenth century there was a constantly growing number of these private mathematical schools as well as of private schools for writing and for modern languages

Private Schools In the latter half of the century the specialist school for separate subjects developed into the private school undertaking the whole education of the pupil These private schools were sometimes solely grammar schools in curriculum

but more commonly taught Latin *and* English mathematics modern languages and book keeping and often it must be said anything the parent liked to ask for The earliest specialist schools in modern languages and in writing received girl pupils The first noted private girls' school for all kinds of subjects appears to have been that of Mrs Perwick at Hackney in 1643 (see GIRLS EDUCATION HISTORY OF) the most famous perhaps was that of Mrs Bathsua Makin at Tottenham High Cross The private schools taught in English and in 1712 was published a book which marks the complete severance from the Latin centre of instruction John Brightland's *Grammar of the English Tongue* ' making a complete system of English education for the use of schools of Great Britain

The National Loss through Ecclesiastical Narrowness The great national catastrophe of the Act of Uniformity and the withdrawal of the 'two thousand' clergy from their livings broke up the old educational traditions along with the theological traditions The refusal of legal recognition to those who thus left the English Church and became Dissenters by regarding them as still subject to ecclesiastical jurisdiction though deprived of their preferments and therefore as requiring the bishop's licence if they taught school (though possessed of every intellectual and moral qualification) at once deprived the grammar schools of their services and made even the establishment by the ejected clergy of private schools an illegal act and rendered such as attempted it liable to vexatious suspicion and sometimes of imprisonment (See LICENSING OF TEACHERS)

Advocacy of Educational Reforms The period of the Commonwealth (1649–1660) stands out prominently as that of the English educational Renaissance Samuel Hartlib (*q v*) is the educational centre as Lord Bacon was the intellectual centre of the preceding period The main current of the traditional classical grammar school flowed on into pedagogical literature in John Brinsley (*q v*) 1612 and in Charles Hoole (*q v*) 1660 But the advocacy of reforms in the aims and scope and in the methods of education was made urgent in England as it had never been before mainly in the direction of wider scope of curriculum and realism in treatment through appeal to sense perception in the writings of the three great educational leaders John Amos Comenius (*q v*) Samuel Hartlib (*q v*) and John Dury (*q v*) In Hartlib's group are to be reckoned in addition Cyprian Kinner (who urged the desirability of a school collection of *living* animals) George Snel who advocated training colleges for teachers Hezekiah Woodward with his claim for natural science teaching of children John Hall with his suggestions for research work in science in the old universities William Petty with his plans for colleges and schools to be equipped with all the helps for scientific and technical training Samuel Harmar with his schemes for the education of the poor John Evelyn with the eye of the educational connoisseur Sir Henry Wotton with suggestions founded on practical experience of diplomacy and above all the eloquence of a John Milton amid the din of war declaring that the education which alone sustains life worthily is that which makes men magnanimous for which a high price of concentration has to be paid in which the learning of the past the knowledge of the present are joined with the all controlling desire to train pupils so that they may be worthy patriots dear to God and famous to all ages Milton's encyclopaedic ideal was an ideal of the age proclaimed as aim in the projected academies of Edmund Boulton 1620 Francis Kynaston Balthazar Gerbier (*q v*) 1648 and Lewis Maid well (1700) Milton suggested (in the *Ready and Easy Way to Establish a Free Commonwealth*) the establishment of schools and academies wherein children should be bred up in *all liberal arts and sciences* as well as in grammar

The State and Education James Harrington in his *Oceana* advocated free compulsory State directed and universal education Politically it was proposed to confiscate the revenues of bishops and deans and chapters and to devote the proceeds to the advancement of learning and piety' — though piety held much the preponderance During the Commonwealth control of education passed in every direction from the Church to the State

Decadence of Classical Education The political rebound after the Restoration carried with it all this nucleus of the organization of popular education but the inner bonds of the traditions of the schools and the schoolmasters had been roughly loosened Thomas Hobbes stated the Royalist view when he argued that the school and university study of the classics developed the idea of struggles for liberty and against kings and emperors and regarded the founders of republics as heroes The king Charles II founded the first modern department of a school the Mathematical School, in Christ's Hospital in 1673 After the Restoration the diplomatic language ceased to be Latin (Milton had been Cromwell's Latin or foreign secretary) and became French Private school masters spoke boldly of less Latin to afford time for French and other subjects In 1677 Elisha Coles wrote a school text book which he described as the *Youth's Visible Bible* This taught the Scriptures by 'hieroglyphics' pictures and led the child to learn Latin by pictures of objects and persons connected with the Scriptures leading the pupil to general knowledge and picking up Latin by the way

The Substitutes for Grammar Schools With discouragement on every side the grammar schools gradually declined in England after the Restoration The first town apparently to have an old English grammar school divided into a Latin school and an English school was Exeter in 1627 but Archbishop Harsnet established a double Latin and English school at Chigwell in Essex In 1718 two separate schools—Latin and English—were re established from an older single foundation at Risley in Derbyshire Thus of public grammar schools the Latin schools were deteriorating in prestige (as Latin was deteriorating in popular estimation in the greater commercial prosperity of an England greatly increased in population) Dissenting Academies (*q v*) were attracting some of the best of those boys who wished for higher education and the great mass of the poor population was becoming content with the elementary education of the Charity Schools (*q v*)

F W

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SEVILLE, THE UNIVERSITY OF —If Cordova (*q v*) was undoubtedly foremost in promoting love for education and taste for books next in order came Seville the birthplace of the king poet Almotamid The great Cordovan philosopher Averroes and the celebrated Sevillian physician Avenzoar were discussing once whether Cordova or Seville was the pre eminent town when Averrões finished the argument with this pregnant remark

I do not know how it is but as a matter of fact whenever a sage dies in Seville his library is carried to be sold in Cordova and whenever a singer or musician passes away in Cordova his instruments are brought to be sold in Seville ' This anecdote emphasizes the typical feature of each city Seville had not the range of Cordova in educational work but its schools the multitude and importance of its libraries and the fame of its book market which ran the length of a whole street tell us how rightly it can be said that Seville was next to Cordova in educational work

Unfortunately there is a scarcity of information about the schools of Seville in the Arabic period (from the ninth to the fourteenth centuries) There were of course in those times schools of philosophy literature medicine and mathematics and in them according to Rodrigo Caro students from every quarter of the world assembled The writer Platina and those who compiled lives of the Roman pontifs say that Pope Sylvester II then a Benedictine monk from Florence was a student in Seville and the great physician Avicena studied there

The existence of one of the Sevillian schools is revealed by a memorial stone standing in the cloister of St Salvator Its Arabic wording was deciphered by Sergio Maronita as follows " In the name of Almighty God The praises of God upon Mahomed and his disciples Salvation on them through grace of God in Whom I hope and Mahomed my help This is the School of Lord Maruam May God grant us His grace etc

The Christian King of Castile Don Alphonse X surnamed the Sage endowed Seville with a new *Studium Generale* the charter of which dated 1254 states that the new foundation is granted ' in order that there might be increased study of Latin and Arabic As the Arabic population had no need to learn its own language it follows that the teaching of it was intended for the Christians but perhaps it implied also the study of physics astronomy and medicine the text books for which were written in Arabic Therefore the present University of Seville may date its birth as far back as the middle of the thirteenth century

The importance of this University may be realized when we remember that within its precincts studied Arnold de Vilanova and his disciple Raymond Lull (*q v*) both illustrious men, who may be regarded as the great exponents of experimental physics and of chemistry in Spain during the Middle Ages C R G

SEWELL, ELIZABETH MISSING (1815–1906) —Author and teacher was sister to William Sewell, founder of Radley College and to James Edwards Sewell Warden of New College (Oxford) for forty-two years Their parents were Thomas Sewell, solicitor of Newport Isle of Wight and Jane Edwards his wife Except for visits and for two years spent at school in Bath the whole of Elizabeth Sewell's life was passed in the Isle of Wight

Through her brother William she came under the influence of the Oxford Movement Her books had always a deeply religious tone and her stories were largely concerned with Church principles The most popular were *Amy Herbert* (1844) *Laneton Parsonage* in parts (1846–1848) *The Experience of Life* (1852) and *Ursula* (1858)

She did service to the youth of her day in *The Child's First History of Rome* (1849) *A First History of Greece* (1852) and very many more educational works Among her many religious books nothing was better than *Thoughts for the Holy Week* (1857) Her *Principles of Education* (1865) was considered so valuable that it was re published in 1914 edited and abridged by Mrs George Chitty

These *Principles* she carried out in her beautiful home Ashcliff Bonchurch where for years she took a limited number of pupils beginning with her own nieces Her educational ideas were far in advance of her age she believed in wide reading and general cultivation and she instilled into her pupils a love of knowledge and a devotion to the religious ideals for which she lived She founded St Boniface School Ventnor for the daughters of tradespeople in the Isle of Wight

She died on 17th August 1906 and is buried in the churchyard of Bonchurch almost in sight of her old home H O B B

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SEX-HYGIENE TO BOYS, THE TEACHING OF —Few parents or teachers who have faced the facts are satisfied with the negative practice of leaving sex impulses to develop without educational recognition There is good reason to believe that a little wise and friendly counsel would often save a wholesome life from avoidable unhappiness and enfeeblement But the basis of ascertained fact as to the results of sex instruction is still so narrow that no dogmatism is permissible Sex is a very personal quality with extraordinarily subtle implications and its discipline like that of the religious emotions is to be sought along lines of indirect as well as of direct culture

Many shrink from the responsibility of breaking into the adolescent's reserve of mind But there is no psychic violence or brutality in good sound physiology which does not make the grotesque assumption that man has no reproductive system

Doubt is also expressed whether teachers would be justified in attempting intrusion into what ought to be a parental responsibility But it does not appear that parents do much in the way of discharging this particular responsibility Few are able to utilize the indirect, impersonal biological

approach The personal aspect of the case rises too obtrusively in the boy's mind when his parents speak to him about sex Moreover children who most need guidance because of inborn predispositions to go wrong are least likely to get it from their parents The upshot of the *laissez faire* policy is that information regarding a central function in life is picked up haphazard often in an inaccurate and discoloured form often from sexually precocious or perverted acquaintances While every care must be taken not to give premature instruction every educationist will agree with Stanley Hall as regards the importance of getting the right presentation first preoccupying the mind with a dignified wholesome view

Considerations that should Influence any Teaching Supposing it to be granted that there should be *some* indirect or direct sex instruction in boys' schools we would make three preliminary notes—

1 In man we have to do with somewhat general and vague sex impulses not with precise and sharply defined sex instincts such as we see in many animals Thus we have in regard to sex functions very little instinctive knowledge of what various phenomena mean or of what is quite normal or of what is to be carefully avoided We should therefore remember that a boy may slide into bad habits without being well aware of what is happening

2 Too much must not be expected to result from teaching sex hygiene for habits are formed in the concrete by habitually doing or not doing and if the moral tradition of the school or the conditions at home and elsewhere tend to the establishment of a vicious habit of word thought or deed it is not likely that sex instruction will serve as much of a counteractive On the other hand straight firm teaching has great efficacy in sweeping away morbid curiosity pruriency and sniggering And again if a boy has confidence in his teacher he may get rid of a worrying obsession by having a quiet talk

3 The mode of sex instruction attempted should not be far ahead of contemporary public sentiment and it is plain that it must be differentiated with reference to the various sections of the community and the ages of the pupils What we suggest is a graduated series of methods leaving it of course to the discretion of the teacher to discover and decide how far along the series or along any line in the series it is profitable to go

What May Safely be Done We say discover for one of the greatest difficulties is that we know so little except through reminiscence of the way in which the boy looks at sex and its expressions

(*a*) Much may be done to promote wholesome adolescence by developing external preoccupations and responsibilities by opening up paths of legitimate excitement by disciplines in self control and in enduring hardness Above all as Stanley Hall says develop motor activities

(*b*) There is strong hopefulness in trying to establish associations between sex impulses regarded as the physical basis of love and the chivalrous the poetic and the romantic Without drawing morals in any tedious way from school studies in history and biography it is surely possible to make the fact clear that control and chastity make marriages happy and nations strong while the *corruptio optimi* is already hell In indirect ways it may be possible to create a school-tradition which sets a premium on self control courtesy and healthy mindedness It has often been found possible to put an end to jocularity of speech about love and vulgarity of mental attitude towards 'sex

(*c*) Many teachers have recorded the value of Nature studies in clearing away the clouds that gather about sex Much may be done—without in the least spoiling good botany and zoology—to let the open air into the whole subject of sex and reproduction removing it from a human and personal reference and studying it in its natural setting This is perhaps easier in rural conditions where some of the phenomena of sex and reproduction are too familiar to excite remark or cause embarrassment but we may recall Thoreau's wise saying For him to whom sex is impure there are no flowers in Nature

(*d*) Some are inclined to go a step further maintaining that as the boys cease to be children there should be quite frank counsel given in regard to the dangers of adolescence and the best ways of dealing with them Some head masters have straight talks with their boys others lend books or tracts of good advice in many cases the most effective counsel is that of the school physician who can speak with most authority and without any embarrassment

We would conclude this brief treatment of an extremely important subject with a quotation from the volume on *Sex* (see References) Whether the sex instruction is direct or indirect through hygiene or through Nature study whether it is given by the parent or by the head of the school by the science teacher or by lending booklets—care must be taken not to anticipate interest not to excite not to say what is untrue not to teach what will have to be unlearned afterwards not to make false mysteries (such as dusting a stigma with a pollen laden feather might dispel) not to deal with the pathological not to frighten not to pretend that men and women are angels and above all not to say too much J A I

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SEX-HYGIENE TO GIRLS, THE TEACHING OF —The question of how young people first come into contact with the facts of sex demands careful consideration by parents and teachers Many mothers either intentionally or from moral cowardice postpone all mention of such subjects to their girls until the latter are nearly or quite grown up others leave it entirely to chance how and where their daughters shall obtain this knowledge As a matter of fact a girl rarely reaches puberty without having sought information on the subject or had it accidentally or intentionally thrust upon her

Some time ago an inquiry was made amongst the girls of a certain school to ascertain from what source each had derived her first information about the relation of the sexes The sources recorded included not only young companions teachers and women servants but also tramps grooms brothers and various other men and boys

The Duty of Parent or Guardian. Even mothers who realize that they have a duty in this matter are too apt to assume that the difficult problems which gather round it need not be faced until their children begin to grow up The truth is that it is at birth that we all begin to grow up and to the

daily small habits begun in infancy the moral strength of mature life owes much Many quite little children fall into bad habits through the ignorance of those in charge of them A garment which rubs where it ought to be loose hands straying over the body in bed instead of being tucked under the pillow or cheek carelessness in the manner of washing or publicity where there ought to be privacy are all examples of things concerning the avoidance of which the careful mother will be on the look out Modern children are apt to begin much earlier than those of former generations to ask questions about the origin of life As a rule they take their own existence for granted but the arrival of a new little sister or brother generally results in questions being asked as to where it came from If the fullest confidence exists as it ought to do between a mother and her children it will be to her that these questions will be brought When they are asked the essential things are that the answers given shall be absolutely true and as brief as possible

The Importance of Truth Nothing is commoner than to put such questions off with untruthful romances and joking answers The child is told that the baby came in the doctor's bag was brought by the nurse on the stork or was found in the garden under a gooseberry bush Many people otherwise truthful and accurate seem to regard this subject as one upon which it is allowable to make these untrue or absurd statements never realizing that thereby they are giving stones when bread of a specially good quality is required of them How much better to tell the little child truthfully and reverently that the baby grew in its mother's body until it was big enough or strong enough to live separately To know this only makes the child realize how entirely it belongs to the person it loves best in the world

A very little new information is received by a young child as a full explanation Therefore be brief Satisfy its curiosity which is nothing but a healthy thirst for knowledge When further questions arise it will come again to hear more Only when untruths are told and mysteries made about these things is a less healthy curiosity developed and the child comes to feel there is something unclean about what she ought to be shown is holy

Direct Teaching in Home and School When real education begins not only do natural history botany and zoology contribute to a helpful mental background for this special teaching but all interests and all knowledge help to fill the mind with materials for thought and so keep out morbid and undesirable ideas

Natural science and observation of plants and animals provides a language and analogies by which mothers and teachers can explain things otherwise in danger of becoming too personal

Reference to sex as we have said is to be avoided with the younger children until they themselves bring questions No mother however or woman who is taking the place of a mother towards girls ought to allow them to go away to school or reach puberty without making an opportunity to tell them of the changes which are about to take place in their physiological functions She ought also to explain their meaning and importance and give the girls directions how to manage their health at that time All this should be done in as simple a manner as possible without fuss and sentiment Mothers and teachers ought fully to be aware of the mental instability natural to the time of puberty and adolescence and do all in their power to watch over the mental poise and balance of the girls for whom they are responsible This is best accomplished by remembering that they are passing through the age of altruism and that free opportunities of working for or helping others will be their wholesome and natural outlet The greater liberty to work and mix with their fellow creatures which is to day given to girls is hence resulting in a sounder type of young womanhood than was common in the last century A girl who has regular work and opportunities of throwing herself into the lives of others is less likely to spoil her life and that of her children by an unhappy marriage She will not marry as many of her ancestors did for the mere sake of being married

Before concluding we wish to enter a strong protest against all class teaching to children on the subject of sex as it relates to human beings The needs of one differ from those of another and while individual talks may be of the greatest service general lectures may only do harm The expediency is quite different from the case of older women H WEBB

SHAKESPEARE AS AN EDUCATIONIST—Shakespeare's own education is a guide to his opinions His father was almost certainly a Puritan and a Recusant his mother though no professed Romanist was probably attached in sentiment to the old faith He perhaps learned to read in the Geneva Bible The bishops Bible he heard in church He learned the Catechism and certain metrical Psalms At school the instruction was on mediaeval lines not a little wearisome and fortified by plentiful doses of preeches but young Shakespeare probably acquired more Latin than is now asked of a graduate at Oxford The influence of the Bible and Ovid's *Metamorphoses* on his imagination can hardly be over estimated His genius for words—their sound root elements and capacity of expression—dates also from his school days That he learned to sing and play a musical instrument is very evident From school he went assuredly into a lawyer's office He was probably a lawyer's clerk when in his nineteenth year he married Anne Hathaway To escape from the drudgery of an attorney's life with equal probability he joined the Earl of Leicester's players on their visit to Stratford in 1587 Nine or ten years of acquaintance with wills and inventories and the proceedings of the local Court of Record widened his vocabulary and his estimate of human motive In London his experience was immeasurably enlarged The Metropolis and the Court were his University

Early Work Unlike that of Marlowe his genius did not all at once manifest itself His earliest work is imitative and painstaking It shows however that he loved Nature and freedom enjoyed field sports could handle his bow and bill and was a rebel in his views of education He was on the side of the child the schoolboy and the lover against arbitrary parent and master His children are precocious and over taught They play with words and metaphors are pert and sprightly or pathetically wise and affectionate The restless little Mamilius with his smutched nose and ghost story is the one happy child and Polixenes, in

the same late play is the one happy father of a little boy—

' He makes a July's day short as December
(*Wint Tale* i 2 167)

Parental discipline was stern and children were much left to nurses and tutors The Capulets are harsh with Juliet Egéus with Hermia the Duke with Silvia Brabantio with Desdemona Lear with Cordelia The father of Portia makes hard conditions Antonio is peremptory in *The Two Gentlemen*—

What I will I will and there's an end
(i 3 65)

Sons and daughters in their turn are wilful and Shakespeare sympathizes with them though he sometimes brings them to a tragic end He pleads for youth—' The brain may devise laws for the blood but a hot temper leaps o'er a cold decree (*Mer of Ven* i 2 19 f)—and for nature—

My noble father
To you I am bound for life and education
but here's my *husband*
(*Othel* i 3 180 ff)

And being an artist he demands pleasure in work—

' No profit grows where is no pleasure ta'en
(*Tam of Shr* i 1 39)

His schoolmasters are fussy and pedantic *Love's Labour's Lost* is a satire on learning that is an empty show of wisdom on—

Taffeta phrases silken terms precise
Three piled hyperboles—
(v 2 406 f)

on study divorced from action—

While it doth study to have what it would
It doth forget to *do* the thing it should—
(i 1 144 f)

and on unseasonable application to letters—

So you to study now it is too late
Climb o'er the house to unlock the little gate
(i 1 105 ff)

Frequently he emphasizes these points Henry VI sits passively reading in the Tower while the murderer approaches Hamlet is an overgrown student The philosophic Brutus is a failure Prospero owes his misfortunes to the love of books which he prized above his dukedom Straightforward men of action on the other hand like Henry V and Orlando succeed Says the poet—

he cannot be a perfect man
Not being tried and tutored in the world
(*Two Gent* i 3 20 ff)

The hand of Portia whom all the world desires—

From the four corners of the earth they come
To kiss the shrine this mortal breathing saint
(*Mer of Ven* ii 7 39 f)

is won by a scholar and a soldier Shakespeare's ideal like that of Roger Ascham combines The Book and the Bow Hence his own practical wisdom He is no mere dreamer no Bohemian but thrifty sane and keen to turn poem or play into money

Later Work A striking development in the mind of the poet and a corresponding change in the character of his art mark the closing years of Elizabeth and the accession of the pedantic James Life was not so simple and obvious as in the glorious days of the Armada Problems had arisen, national and religious full of perplexity demanding the highest statesmanship Shakespeare turned to tragic enigmas Brutus and Hamlet are ineffective yet their author would hardly rank them as men below Henry V and Orlando After reverting for a moment to comedy he broke away to impassioned representation of vice and folly which were leading England into confusion and civil war What was Puritan Miltonic in his nature blazed forth in depicting the devil drunkenness sensual passion and pride On the other hand he gave us the chastening and exalting effects of suffering The wild regret of the Christian Moor and his cry Never *pray* more! the repentance of Gloucester and the old King the transformation of Lady Macbeth the spiritual beauty of Desdemona and Cordelia show kinship with Dante A later group of dramas are almost as spiritual and are gentler Imogen Marina Perdita Miranda suffer grievously but reach the haven where they would be Among them is the preceptor Prospero unmistakably Shakespeare no longer indulgent radiant jovial (if this adjective ever described him) but stern a disciplinarian a believer in original sin Yet he is the same Shakespeare—

they being penitent
The sole drift of my purpose doth extend
Not a frown further
(*Tem* v 1 28 ff)

His latest drama Henry VIII is distinct in temper as in metre from the group of plays preceding It is deeply patriotic in praise of Elizabeth and the Reformation—

Sabra was never
More covetous of wisdom Truth shall nurse her
God shall be truly known
(v 5 24 ff)

But it looks beyond England beyond life Its central scene is a vision of Heaven (i 2 77 ff)

Shakespeare's doctrine may be open to question but scarcely his religious spirit and consequently the importance he would attach to Religion in the training of Englishmen E I FRIPP

SHAKESPEARE IN SCHOOLS, THE TEACHING OF—Methods of teaching Shakespeare in schools vary with the teacher's aim tacit or acknowledged—whether cultivation of appreciation or formal discipline (attained through elaborate grammatical analysis and paraphrasing committing to memory long passages and learning detailed philological annotations) or development of appreciation and mental discipline combined True appreciation implies mental discipline of a particularly valuable nature viz the unconscious growth of powers of comparison and inference in the gradual emergence of critical judgment

The study of Shakespeare in schools is a modern development and has passed through certain experimental phases About fifty years ago the reading of Shakespeare's plays was introduced into the City of London School Since then two circumstances tended to stultify the teaching of Shakespeare viz the tyranny of an examination system which usually prescribed the intensive study of one isolated play for the whole school year on lines most conducive to ease in examining and the lack of text books with simplified notes philological text books invaluable for university students being put into the hands of school children confusing methods proper to the schools with those of the university stage The old analytic method

of studying the Latin classics was thus carried over into the study of the English classics

Dramatic Presentation There are now signs of a more appreciative study of Shakespeare—the greater elasticity of examination syllabuses the better supply of simplified annotations or even cheap texts without annotations and the frequency of the *acting* of Shakespeare scenes by school pupils To all English speaking children Shakespeare is a birthright and his plays must be so introduced as to promote enjoyment and not disgust That Shakespeare can be enjoyed by children despite the language difficulty (every decade removes his language further in character from current English) is proved by the zest with which older pupils of elementary schools frequently act portions of the plays

The informal acting of the plays in whole or part by the pupils is an essential feature of the intelligent study of the dramatist It brings out the inherent dramatic quality—the plays were written to be acted The action is a comment on the language the situation realized dramatically in acting often illuminates passages otherwise difficult and obscure Acting tests the pupil's comprehension Verbal paraphrasing need not be entirely abolished but acting is paraphrasing in a new medium—interpretation through muscular expression and a co-operative interpretation by a group of pupils is more human and illuminating than individual declamation Graphic illustrations in colours or pencil of scenes or passages form another and subordinate kind of interpretation So important is the acting of scenes that one head master writes The ideal classroom for the study of English literature contains a platform or a stage

Order of Treatment The approach to Shakespeare should be as far as possible direct Lamb's *Tales from Shakespeare* may come first but not as a substitute In no case should a play be anticipated by an elaborate synopsis of its plot which robs it of its freshness and frustrates dramatic surprises Nor should a detailed biography of Shakespeare precede the first reading of the play unless the pupils belong to the district of Stratford on Avon Shakespeare's historical setting is the great time of Queen Elizabeth Drake Raleigh and Essex Little more should be indicated until the play has been read and enjoyed Again sources should not be elaborated

Complete plays should be taken Isolated extracts give the difficulties of Shakespearian diction without the illuminating glow of the story

In the grading of Shakespeare study an evolution in interest has to be remembered The pupil of 12 or 13 looks mainly to the story and demands bold and easily comprehended situations and strongly marked characters especially those cast in a heroic mould Gradually the characters draw more of the attention and also the problem of how they will act under such and such circumstances Lastly as adolescence develops the speculative tendency grows and the appreciation of less obvious sides of life and character—thus the three objectives of interest succeed one another the story the person the problem

Julius Caesar Henry V The Merchant of Venice and *Midsummer Night's Dream* appeal to the interests of younger pupils *Julius Caesar* makes a good beginning opening in a clear brief way *in medias res* and like *Henry V* can be related to the history teaching—the historical matter coming first

For pupils aged 14–15 *Richard III The Tempest* (in connection with the maritime adventure of Tudor times) *As You Like It* or *Twelfth Night*

For pupils 15–16 *King John Richard II Henry IV Macbeth Coriolanus*

For pupils above 16 *The Winter's Tale Much Ado About Nothing King Lear* and *Hamlet*

Method of Treatment The first treatment of a play in class should be mainly a reading aloud in parts with a view to bringing out the main points of the story the pupils searching the text for the answers to questions on the dramatic situation (*e.g.* in *Julius Caesar* I 1) Why the artisans were in the streets instead of at work and why the tribunes were angry about it? Further, Why did the conspirators want to win over Brutus? and What means did they take? etc Incidentally questions might be asked about the characters the pupils' impressions of whom would gradually be expressed in their rendering On no account should ready made estimates of the characters be given by the teacher

After the first tentative dramatic reading a second and closer reading is necessary for a more intensive study of the play from the point of view of language and versification

In *Julius Caesar* I 1 the class may be led to observe two kinds of people talking in the street working men easy familiar jocular—using prose two officials serious excited angry bursting into impassioned verse—the contrast bringing out the *function* of differentiated literary expression

In the matter of learning by heart pupils should whenever possible exercise some choice of their own they should also be encouraged to pick out for themselves what they consider the most musical lines and then be taught to analyse their quality—to scan them In the dramatic reading they will have caught the spirit of a stirring scene and therewith unconsciously the spirit of the verse

The text book should bring the notes to a minimum and contain a glossary alphabetically arranged Neither annotator nor teacher should stand between the pupil and the play

A WATSON

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The Journal of English Studies (May, 1912)

SHAKESPEARE'S PLAYS IN SCHOOLS, THE ACTING OF—A discussion of the advantages of such representations may now be said to be superfluous General opinion has decided in the same way as Mark Pattison did long ago he remarked at one of the early Shakespearean performances at Hurstpierpoint This is education It is a great gain when one has brought pupils to realize that Shakespeare is something real and living not a dead corpse to be dissected in the classroom

What is to be said here is entirely the result of an exceptionally long experience—a quarter of a century—in the acting of Shakespeare's plays at school

Nearly all the plays may be acted by pupils Some are of course more suitable than others and some are more effective and popular than others But it is surprising how few are really impossible And at schools one should not be influenced solely by effectiveness and popularity A school play gives unrivalled opportunity for the representation of those plays which are seldom seen two of the

most interesting performances at Denstone have been *Love's Labour's Lost* and the First Part of *King Henry VI*—they were also thoroughly effective Again many of the Plays are ruined in the theatre by the Star system by which one or two parts are thrust into undue prominence at the expense of the others For instance when *Twelfth Night* is acted on the regular stage Malvolio becomes the hero of the play and Viola the heroine the rest are nowhere Thus the whole exquisite proportion of the comedy is destroyed At school there is no temptation to do this Every part retains its proper importance and the gain from an artistic point of view is immense Of course a certain amount of editing has to be done and more in some plays than in others In most cases it need only be the elimination of obviously impossible expressions But in some it has to be more drastic Sometimes the play has to be shortened though all shortening should be looked on with suspicion But at any rate *Hamlet* can seldom be given in its entirety In the theatre the play is brought within reasonable compass by cutting out most of the words of every one but Hamlet The result is a grotesque transformation of the play Hamlet himself is forced into a false prominence and the whole play becomes a different thing from what Shakespeare wrote I have stage managed a version of it in which the abbreviating was applied impartially to all the characters—to Hamlet as to the others In this case a fair and honest idea was given of Shakespeare's work and incidentally the play was found to be much less sombre and much more interesting than when the moody prince monopolizes everything Of course I need hardly emphasize the point that in all editing for school purposes we should not be influenced merely by what is supposed to be effective for stage purposes The professional actor fears his audience will find poetical passages dull and therefore he ruthlessly omits them At school on the other hand we shall retain those of set purpose usually they will amply justify their inclusion

The Staging of the Plays As to the staging of the plays I have become a convinced convert to the method which minimizes the amount of scenery used I began my experience with a strong affection for scenery as beautiful as could be obtained I would never have it painted at home the amateur scene painter is hardly ever successful My conversion was brought about in an interesting way *Hamlet* happened to be one of the plays that were to be read in school and I therefore wished to have it for that year's performance in order to assist my boys in understanding and knowing it But we seemed rather deficient in acting ability so I thought to cover poor acting by a novel setting We reproduced the play in old Viking costumes with a large caste of seventy so as to have striking stage pictures and above all with a minimum of scenery There was no proscenium or curtain but dark hangings stretched across the room (about 35 ft) and before these most of the action took place Occasionally they opened in the middle and showed some very simple scenery —the battlements the Queen's Chamber and the graveyard were about all the scenes that were localized The whole of the rest was the Castle There were no footlights and a broad central way was used for various processions and entrances The result was a success surprising most of all to myself So far from the absence of scenery demanding better acting I believe it helped the acting I may also mention the real beauty of the conclusion which was possible with such a setting In due course Fortinbras arrived then Hamlet was borne down the length of the dark room on the shoulders of the soldiers accompanied by some thirty others holding aloft flaming torches Such an ending striking in the extreme and entirely in accordance with Shakespeare's directions is of course impossible on a stage arranged in the ordinary way

We played *Hamlet* with only three intervals the first after the scene with the players and the second after the scene in the Queen's closet Besides these there were no interruptions of the action at all Ordinarily amateur theatricals are ruined by the frequent and inordinate intervals Even good acting cannot survive them In comedies they are especially fatal no sooner have the actors got into their stride and the interest of the audience been awakened than the curtain throws a wet blanket over everything Again if scenery is poor it is horrible if it is good it is costly and difficult to arrange and manipulate It is everyway a clear gain therefore to dispense with it entirely or reduce it to a minimum

The Use of Costumes I am in favour of these being the best that can be obtained They are seldom satisfactory if made at home and cost more than if hired from a costumier But a firm hand is required or your costumier will send you rubbish and in the historical plays inappropriate rubbish Too great attention cannot be paid in school plays to such details as dress armour and heraldry

General Considerations Culture and reverence should govern the whole performance The object should not be simply to provide an evening's entertainment but to give an adequate and seemly representation of the particular play in the spirit in which it was written History will supply many details in the historical plays and tradition in some of the others Careful adherence to the text sometimes throws unexpected light

In conclusion I give a list of Shakespeare's plays which I know to be practicable for school performance—most I have stage managed myself *The Tempest Two Gentlemen of Verona The Merry Wives The Comedy of Errors Much Ado Love's Labour's Lost A Midsummer Night's Dream* (more interesting with the old music than with Mendelssohn's setting) *The Merchant of Venice As You Like It The Shrew Twelfth Night Winter's Tale King John Richard II Henry IV* (Parts 1 and 2) *Henry V Henry VI* (Parts 1 2 3) *Richard III Henry VIII Coriolanus Macbeth Julius Caesar Hamlet King Lear* I should hesitate about *Romeo and Juliet* though I know it has been acted in schools

F A H

SHEPPSHANKS, JOHN—(See SCIENCE AND ART MUSEUMS SOUTH KENSINGTON)

SHEFFIELD, THE UNIVERSITY OF—Founded in 1879 as the Firth College by Mark Firth (1819 1880) a noted steel manufacturer this institution first became incorporated as a University College in 1897 Before this it had been extended in 1892 and in addition to the Firth College proper it embraced a medical school a school of pharmacy and a technical department which was installed in the buildings of the old grammar school In

1903 new buildings were commenced to house the departments of the various faculties and in 1904 it became dissociated from the Victoria University of which it had been a Constituent College In August 1905 royal assent was given to a petition to dissolve the University College of Sheffield and to transfer all the property and liabilities of the University College of Sheffield to the University of Sheffield

His Majesty the King is visitor to the University The most Honourable the Marquess of Crewe K G G C V O is Chancellor The other chief officers are two Pro Chancellors a Vice Chancellor a Treasurer Deans of the faculties of arts pure science medicine law engineering and metallurgy There is also a large University Court the members of which mostly represent public bodies and donors a University Council a Senate and a number of committees Degrees are granted in arts engineering law medicine metallurgy and pure science The department of metallurgy with its laboratories for experiments with iron and steel constitutes an important link with the chief local industry The following diplomas are also granted—dental art masters architecture domestic science education glass technology mining modern language teaching and public health The fee for a course of 4 hours instruction a week during a session in the faculty of arts is approximately 4½ guineas which may be taken as a general guide to the standard of fees all over

The matriculation examination for which a fee of two guineas is payable is conducted twice yearly by a Joint Board of the Universities of Manchester Liverpool Leeds Sheffield and Birmingham Possession of certain diplomas or certificates from other examining bodies exempts from the matriculation examination

A scheme for University Extension aims at providing the means to higher education for persons engaged in the regular occupations of daily life and provides lecture courses pioneer lectures and travelling libraries at moderate fees The University is equipped with museums of anatomy and anthropology pathology zoology and botany and there is also an observatory

SHELDON, ARCHBISHOP —The Archbishop of Canterbury (1663–1677) is chiefly notable as having been the willing instrument chosen to put the Act of Conformity of 1662 and the Five Mile Act of 1665 into force Section 6 of the Act of 1662 declared that every schoolmaster and teacher must subscribe a declaration that he would conform to the Liturgy as by law established while Section 7 heavily penalized schoolmasters teaching in private houses without licence The Act of 1665 forbade dissenters to teach in any public or private school under a penalty of £40 In the same year the Archbishop sent out stringent orders to the bishops of the diocese of Canterbury ordering interrogatories of the most stringent character to be administered Some of the material contained in the returns to the Archbishop to this order have now been made available as well as material for the history of education in this distressing period in which Nonconformity was fighting for freedom (See *Original Records of Early Nonconformity under Persecution and Indulgence* transcribed and edited by S Lyon Turner 3 vols 1911 1914) The vigour of Archbishop Sheldon struck a deadly blow at the old Elizabethan system of education His methods were possible and useful in the late sixteenth century but were destructive a century later

J E G DE M

SHERBORNE SCHOOL —Situated in Dorset in the Vale of Blackmore on a gentle slope facing the south above the River Yeo about 5 miles east of Yeovil Sherborne School was the first grammar school Edward VI founded its charter being dated 15th May 1550 A school had existed there before the Reformation in connection either with the Benedictine Monastery or with the bishopric of Salisbury the see of which had been transferred to Sarum in 1075 by Herman twenty fifth bishop of Sherborne Thus Edward's new school was a re foundation The remains of the old Abbey consecrated about 1150 form part of the present school buildings and comprise the chapel library and studies There are besides handsome modern buildings including a large schoolroom thirteen classrooms chemical and physical laboratories and lecture room an art school gymnasium museum sanatorium workshop swimming bath and a covered rifle range the cricket field covers 11 acres and there are a number of fives courts There are over 300 boys in the school There is an endowment of about £800 a year In the noble cruciform minster church are the graves of Asser King Alfred's friend and tutor and of two of Alfred's brothers Among many eminent pupils may be mentioned Dr J M Neale the ecclesiastical historian and hymnologist Lord Justice Knight Bruce and Lewis Morris the poet L N Parker the distinguished pageant master and playwright was for nineteen years director of music at Sherborne

SHERRY, RICHARD —(See RHETORIC)

SHIRREFF, EMILY (*b* 1814–*d* 1897) —She was born in London the daughter of Rear Admiral Shirreff and sister of Mrs William Grey From 7 years old Miss Shirreff suffered from very imperfect health but her keen desire to equip herself with sound and well balanced knowledge led her from early girlhood to grasp every chance of self improvement and to form rigid rules for study She was much abroad during her youth her father being for a time stationed at Gibraltar In this way she saw a good deal of varied social life and eagerly enjoyed chances of meeting and knowing others whose tastes and interests stimulated her own intense desire for a full and fruitful life Miss Shirreff was an accomplished linguist (French being her *langue intime*) and her deep interest in philosophical speculation gave breadth and elevation to her mind In these studies continued up to quite old age she followed no individual master but all her sympathies and convictions were anti materialistic

In 1841 she and her sister published a novel *Passion and Principle* which ran into a second edition and in 1850 *Self Culture* also their joint work appeared *Intellectual Education* (1858) came from Miss Shirreff alone In this striking book she examines the influence of an intellectual education on the character and happiness of women A second edition appeared in 1862

The foundation of the Women's Education Union in 1871 with Mrs William Grey as hon organizing and Miss Shirreff and Mrs Henry Kingsley as hon secretaries marked a resolute step forward The journal of the Union edited by Miss Shirreff and

Mrs Bartley urged with point and insistency various reforms chief amongst these were the supply and organization of good day schools for girls above the elementary type and the establishment of definite professional training for secondary teachers These reforms having been realized by the formation in 1872 of the Girls Public Day School Company and by the establishment in 1876 of the Teachers' Training and Registration Society the Union was dissolved in 1882 after accomplishing a most useful work Meantime in 1875 Miss Shirreff found the chief interest and mission of her later life in the foundation of the Froebel Society of which she became president To this work she devoted her remaining years Her name will always be associated with true advance in the earliest education of children and with a sound and sane exposition of Froebel's philosophy (See her *Life of Froebel* and various pamphlets *e g The New Education*)

Miss Shirreff was for a term in 1870 mistress of Hitchin College and from the first a member of the Council of Girton College A Liberal of the 1830 type she deeply felt the cleavage and confusion brought about by the Gladstonian Home Rule measures and definitely ranged herself thenceforth among the Unionists Among her chief friends may be mentioned Lady Stanley of Alderley Mr and Mrs Richard Napier and in early years Mr H I Buckle She possessed a most delightful social gift —loving good talk and conspicuously gifted herself with conversational power—brightened by wit and flashes of humour The pioneer work for women's education in the second half of the Victorian period owed much to her in every way while nothing was more characteristic of her than her ready and generous appreciation of the work of younger women—provided only that it bore the hall mark of sincerity and loyalty to sound principle

A J T

SHORTHAND, THE HISTORY OF —The origin of shorthand has been variously attributed to the Egyptians the Greeks and the Romans The penmen and scribes of early nations probably formed their abbreviations into rudimentary types of shorthand It is established beyond doubt that an actual system of stenography was in use among Roman notarii in the time of the Caesars and there are good grounds for attributing the invention of their particular method to Tiro the freedman of Cicero Cicero's system came into general use after his consulate and Augustus and Caesar were proficient in it

From the decline of the fifth century to the Revival of Learning there are very few traces of any shorthand systems nor can any conclusive evidence be found to prove that the Romans introduced shorthand into England Their method of substituting an initial letter for a word led to the formation of an imperfect system of shorthand on the Continent but in France shorthand-writers were considered sorcerers

Progress in Great Britain Towards the close of the sixteenth century a system of shorthand signs to represent the letters of the alphabet was practised in England The history of shorthand in Great Britain from its beginnings to the present time may be divided into three periods each assigned to some specific and social cause From the introduction of the first system by Timothy Bright in 1588 to the end of the seventeenth century the principles of the Protestant Reformation were extensively promulgated in this country from the pulpit A desire to record these preachings led to the cultivation of the newly discovered art of shorthand writing Teachers and systems increased Most of these systems were burdensome to the memory and the difficulties were so numerous that only a determined resolution and intense application could overcome them some were more unsightly and slower than handwriting An original type of shorthand was used by Samuel Pepys in the writing of his Diary but rather as a cipher than as a means of abbreviating The most advanced system produced in this period was that of Mason (1682)

No other marked advance was made until the middle of the seventeenth century when the study of shorthand was encouraged by the dawn of political freedom The publication of the Parliamentary debates led to a need for skilled reporters In 1750 Gurney produced a system founded upon that of Mason and introduced certain characters especially suitable for taking down Parliamentary and law proceedings This system was used by Charles Dickens in his Parliamentary reporting work Many systems followed the chief being those of Byrom (1767) Mayor (1780) and Taylor (1786) Taylor's system was the most extensively used for Parliamentary and private work for about sixty years

The spread of education among the middle classes in the first half of the nineteenth century led to a more general demand for shorthand Cheap editions of Taylor's system appeared in 1823 and of others later Many systems were published most being improved editions of earlier ones Pitman's Shorthand—introducing for the first time symbols for the long and short sounds of the vowels—was invented in 1837 Almost every new system brought some improvement and increased the abbreviating power of shorthand until its utility in every kind of business or clerical work was thoroughly established The art of shorthand writing has now come into use on an altogether unprecedented scale

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END OF VOLUME III